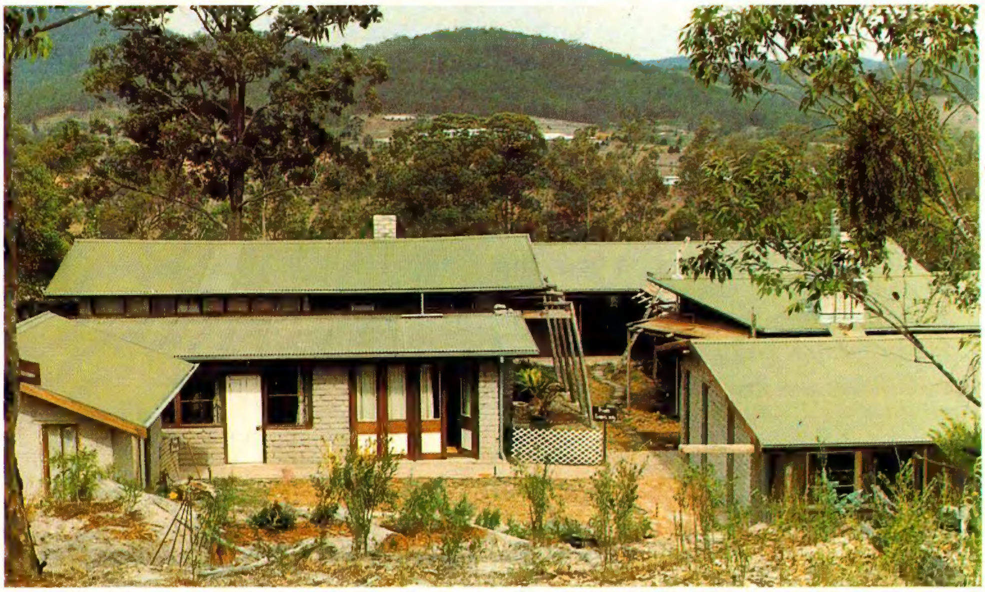
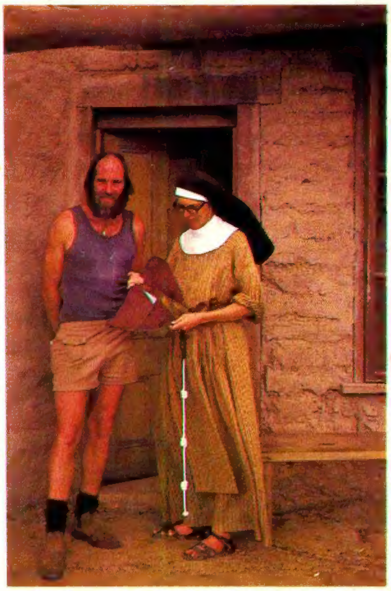
ISSNO310-222X

NO. 29 — FEB-APRIL, 1981 / $2.00*

EARTH GARDEN

—mudbrick building





The mudbrick monastery

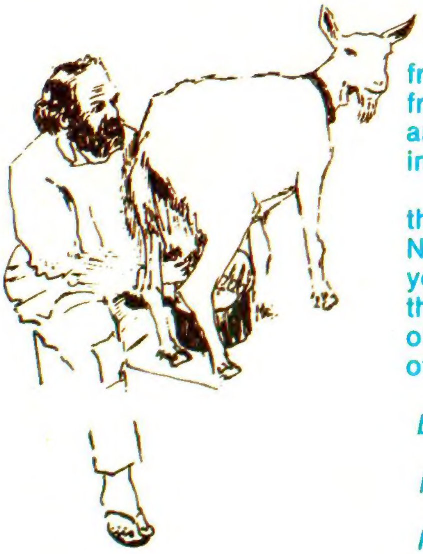
• A MUDBRICK PRIMER, COVERING THE "HOW-TO" BASICS, TECHNIQUES & SKILLS • SIX BUILDERS TELL ABOUT THEIR EXPERIENCES WITH MUDBRICKS • A MUD BARBECUE • BOB'S BONZA BRICKMAKER • EARTH FLOORS, CURVED WALLS AND EVEN AN EARTH ROOF (SOD IT!) • SEEDS • THE CUTTING AXE • LOW ENERGY HOUSE • 23 MORE TROPICAL FOOD PLANTS • COCONUT MATTING • PLACE • LAND LINES • LETTERS • LOTS MORE

Registered for publication as a periodical. Category B.

*Recommended and maximum retail price only

THE BIG PACKET

Earth Garden's survival kit



Earth Garden is about the earth, growing food from it, looking after it and building your house from it. Since our first issue in 1972, hundreds of articles on practical self-sufficiency have built up into a valuable resource file.

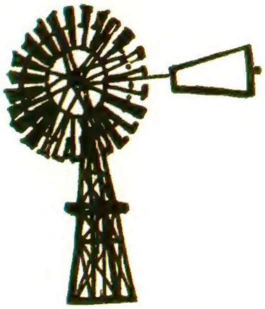
The *big packet* will total 1,600 ad-free pages by the time *Earth Garden 32* is published in November, 1981. That 3 kg parcel which arrives in your letter box may change your life. It includes the two bumper *Access* numbers (EG22-3 & EG25), our guides to methods of providing the essentials of life in Australia during these difficult times.

Some of the subjects we have covered:

building — in mudbricks, rammed earth, stone, slabs, brick or with bush poles.

livestock — keeping sheep, goats, cows, fowls, horses, bullocks, ducks, bees and fish.

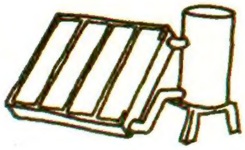
handcrafts — spinning, dyeing, weaving, leatherwork, pottery, candles, making a bamboo flute.



place — new settlers who have left the cities behind regularly report on their place and the good and bad experiences in their new way of life.

energy — solar, wind and water power, building a solar water heater, using solar electricity and methane gas.

growing — organic gardening and farming, natural ways to grow vegetables, herbs, tropical food plants and tree crops such as fruit and nuts — in all climates.



We have run interviews with people like artist Neil Douglas, permaculturist Bill Mollison and naturopath Dorothy Hall, and stories on homebirth, sundials, blacksmithing, keeping food, the hydraulic ram, wood heat, earthworms and touring by truck, pack-horse and yacht . . . and much more. We plan to continue our diverse coverage of the good life.

All copies are still available. Fill out the order form on page 58.

EARTH GARDEN 29

Earth Garden, established in 1972, presents a range of natural lifestyles. It is intended as a key to sources, practical ideas, alternatives and self-sufficiency.

It is concerned with non-polluted living and growing, the back-to-the-earth movement, surviving in the city, the bush, food and diet, and the inner changes which follow when you are in tune with nature.

Let us lead you up Earth Garden's path to the good life.

We don't have advertisements in Earth Garden. That way we're not influenced by any vested interests. Books, places and products recommended are those we think relevant.

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THE COVER

Front cover: *Top left* — An overall view of some of the buildings at the *mudbrick monastery* of the Community of St Clare at Stroud, NSW.

Top right: — Builder Kevin Osmond with Sister Angela.

Bottom left: — The Muddies raising the walls. *Bottom right:* — Mudbrick chimney.

Back Cover: *Top* — A Saturday work party of volunteers making mudbricks. *Bottom* — Jan Bailes with the sod roof of the mudbrick gallery at *The Fragrant Garden.*

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High on the hills, where the tall trees grow,
There lives an axeman that I know.
From his little hut by a ferny creek,
Day after day, week after week,
He goes each morn with his shining axe,
Trudging along by the forest tracks;
And he chops and he chops till the daylight
goes —
High on the hills, where the blue-gum grows.

Bell-birds watch him; and in the fern
Wallabies listen awhile and turn
Back through the bracken, and off they hop.
(Chip! . . . Chop! . . . Chip! . . . Chop!)
Patient and tireless, blow on blow
The axeman swings as the minutes go,
While the echoes ring from the mountain-top.
(Chip! . . . Chop! . . . Chip! . . . Chop!).
C. J. DENNIS

Illustration by Hal Gye.

THE CUTTING AXE

By DUSTY WOLFE

Before the days of chain-saws the cutting axe played an important part in the life of people on the land. Even today a good axe in the right hands is an extremely useful and efficient tool.

The cutting axe is not for use on the wood heap. It is dangerous — and a single false blow can put the user in hospital.

No two axes are exactly alike. Their character depends on the type of head and shape and spring of the handle. It may take months of continual use to master a particular axe, but once this is achieved the tool is invaluable to its owner.

This individual characteristic of fine axes makes them personal tools unsuitable for co-operative or casual use. The thin blade will be damaged by the smallest grains of sand or grit and must not be allowed to touch the ground. White streaks on the cut surface of the wood tell the cutter that the axe has been damaged and the blade should be ground at once with an axestone.

Never lend a cutting axe. Axe borrowers rarely have much respect for fine steel as you will see by the nicks in the blade when it is returned. A good plan is to keep a spare axe with a thick blade and gum handle for the use of borrowers.

Safety

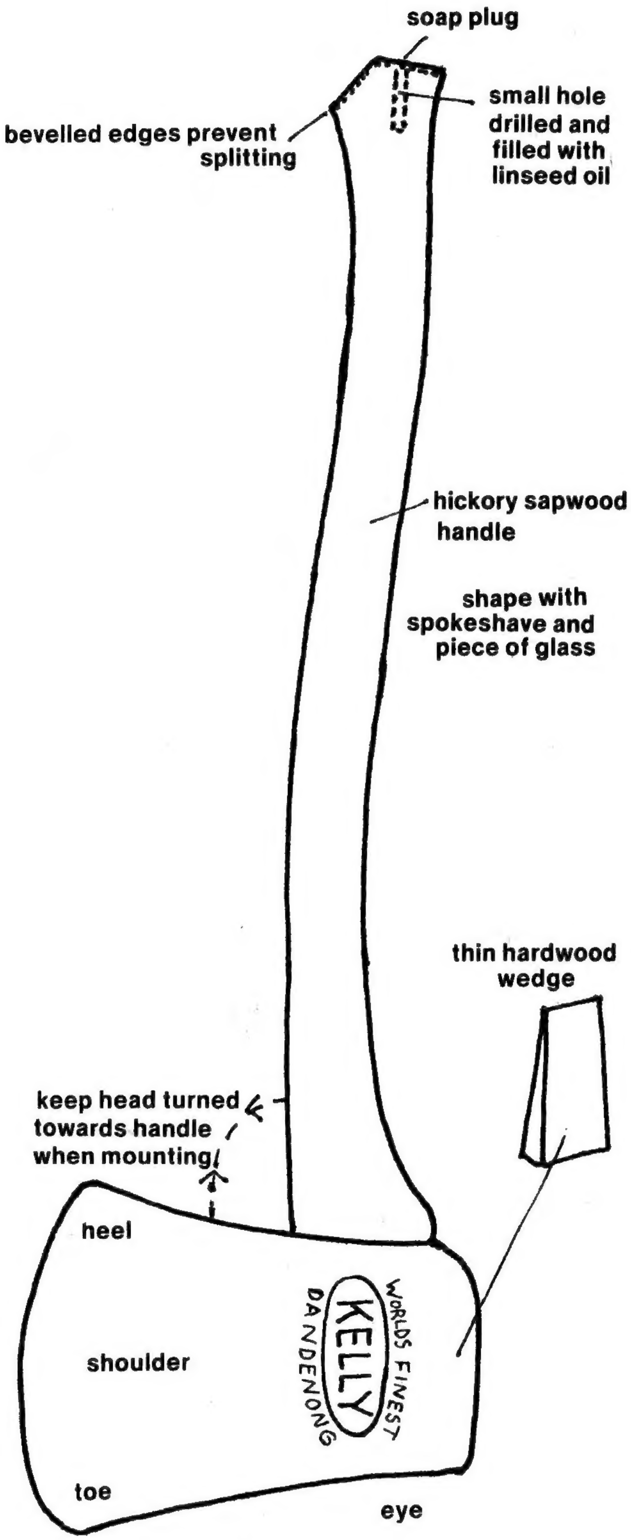
These are common causes of accidents:

- A person slips and gashes a hand when sharpening an axe with a file or axestone.
- The axe strikes an overhead branch during a swing.
- When pruning a limb from the underside of a log, the axe ricochets and strikes the cutter in the leg. For such awkward blows, grip the handle with both hands close to the axe head.
- Overstriking. When the final blow severs a branch or log, momentum of the axe causes the cutter to lose control. Avoid 'mighty' blows and let the weight of the axe do the work.
- Lack of balance. Never strike at a limb above your shoulder height.

Preparation

Most important is selection of a good axe head. A finely tempered axe is difficult to obtain and some luck is needed. Poor quality steel cannot be ground to a fine edge. By purchasing an axe with a thin blade you will save yourself much work in grinding.

Better still, a search of old sheds or boxes of junk at auction sales may reveal some long-lost treasures, for replacing a broken axe handle has always been an unpopular job.


soap plug
bevelled edges prevent splitting
small hole drilled and filled with linseed oil
hickory sapwood handle
shape with spokeshave and piece of glass
thin hardwood wedge
keep head turned towards handle when mounting
heel
shoulder
toe
eye
WORLDS FINEST
KELLY
DANDENONG

If the brand on an old axe head cannot be deciphered, rub it over with kerosene on a rag and the lettering may appear. You may be lucky enough to find a Canadian *Kelly*, which has the words 'True Temper' and 'Made in Canada' on one side and 'World's Finest' and 'Dandenong' on the other. The original *Kelly* or *Dandenong* axe was once keenly sought after by timbercutters due to its fine temper. Another good brand is *Plumb*.

The handle should be of hickory sapwood with no brown heartwood present. Shape the handle with a spokeshave. A lean, arched handle will give plenty of spring and be easy on the cutter, but a false blow will shatter it. Start with a thick handle and work down to a finer size as you gain experience. Smooth the handle by scraping with a piece of broken glass and then rub with sandpaper.

Grinding the blade is best done on an old-fashioned circular sandstone with a patient friend turning the handle. It can also be done by filing — *but this is dangerous* — while the axe is held in a vice.

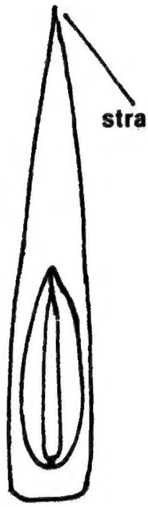
Power-driven emery wheels should be avoided as they heat the metal and destroy the temper. The result of emery-grinding is that small chips of metal will fly from the thin axe blade when it strikes into hard wood.

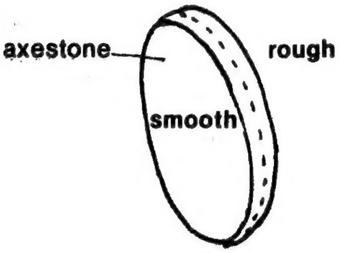
If you are able to attend a woodchop contest, any member of the Axemen's Association will be pleased to explain the preparation and use of a cutting-axe.

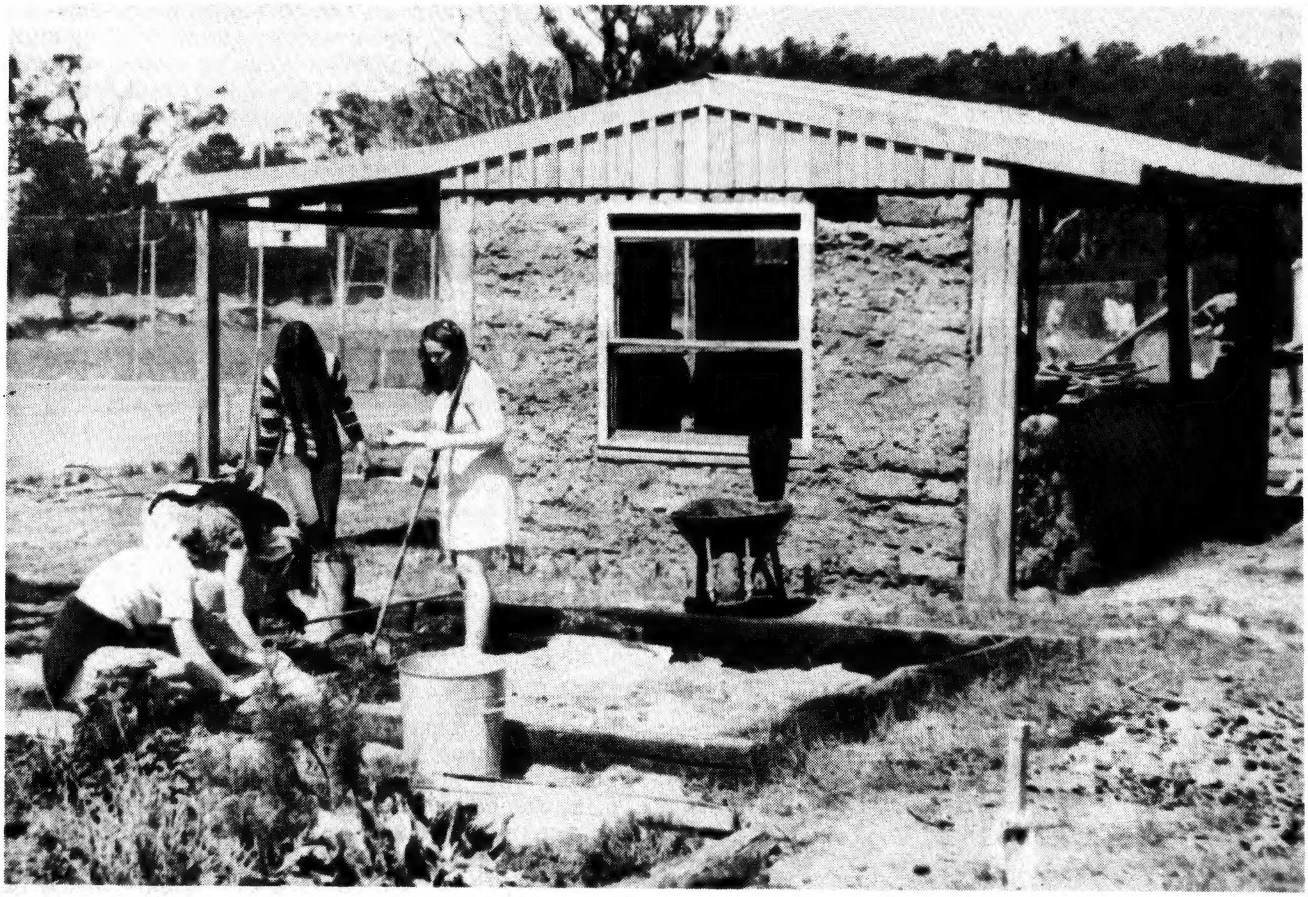
Don't forget to make a wooden or leather guard to protect your axe blade. A wooden guard is simple to make and consists of a block of wood hollowed out and held on the axe head by a piece of inner tube.

The important things in axe work are accuracy, judgement and balance. One gentle blow in the right spot is worth ten wild swings. A friend of mine once took up pulpwood-cutting and was pleased when the other cutters, after viewing his performance with an axe, gave him the nickname of *Lightning*. It was not until later that his ego was shattered when someone explained to him that 'lightning never strikes twice in the same place'.

If you decide to become an axeman or axewoman, don't start off with a razor-sharp racing axe and end up in the local hospital. Remember that you are taking up a craft as old as the stone age. It is something which cannot be mastered overnight.







Subjects for today

MUDBRICKS & GARDENS
Hastings High School, Victoria

It's called 'curriculum innovation' and for the 27 students of Year 10 Hastings High School in Victoria during 1980 it meant being involved in a list of exciting projects, including building a mudbrick cottage, setting up an organic fruit and vegetable garden and developing a permaculture landscape.

Ken Slater, co-ordinator of the integrated studies course at the school, says the emphasis is placed on student initiative and resourcefulness, "dependent upon co-operation rather than competition".

The students spent 12 periods each week on the projects, which covered a practical and theoretical study of early Australian social life and history, appropriate technology and alternative lifestyles.

Other aims were to build a hot house for plant propagation, installation of various sources of energy for heat, light and power, such as wind generation, solar hot water panel, wood stove, photovoltaic cells, and a pedal exerciser, building a sod roof chicken coop and 4.5 metre yacht and investigating sailing as a recreational activity.

The objectives were outlined in a task sheet with the perspective plan or directive divided into operational units. In building the mudbrick cottage, for example, each student was given a particular aspect of the building to research.

Some of the tasks set included researching the term 'foundations', determining the type of foundations needed for the building and estimating the quantity of materials needed, testing various soils for making mudbricks, designing and preparing working drawings of the building and investigating the properties of various types of insulation.

A weekly diary was kept covering all events and activities during the period. "The philosophy behind the integrated studies course", says Ken Slater, "is that many students see little relevance in the traditional curriculum as the daunting prospect of unemployment casts a shadow over the validity of conventional subject based courses.

"However, by exposing students to a wide range of skills and activities, students perceive this learning situation as relevant and valuable for future living."

Possible areas of study for the integrated studies group in 1981 could be the design, building and development of geodesic domes as heat sources, storage areas and greenhouses, farming of bees, goats and sheep and the varied uses of their products, designing and building of raku kilns and bread ovens.

Most tasks in the project are related to developing an area of land granted to integrated studies by the school council.

PLAN OF THE INTEGRATED STUDIES AREA

1. Sod roof chicken coop and run.

To be connected to glasshouse to provide night time heat source for plant growth. Roof is to be planted with various herbs.

2. Glass house.

To be used for plant propagation and as heat source for adobe building.

3. Solar pond.

To be used in conjunction with water storage system in greenhouse to provide night time heat source.

4. Adobe (mudbrick) building.

To be used as storage work area for integrated studies students and to provide means whereby practical and theoretical exercises can be undertaken. The building is to be powered by three sources of energy using a battery storage system.

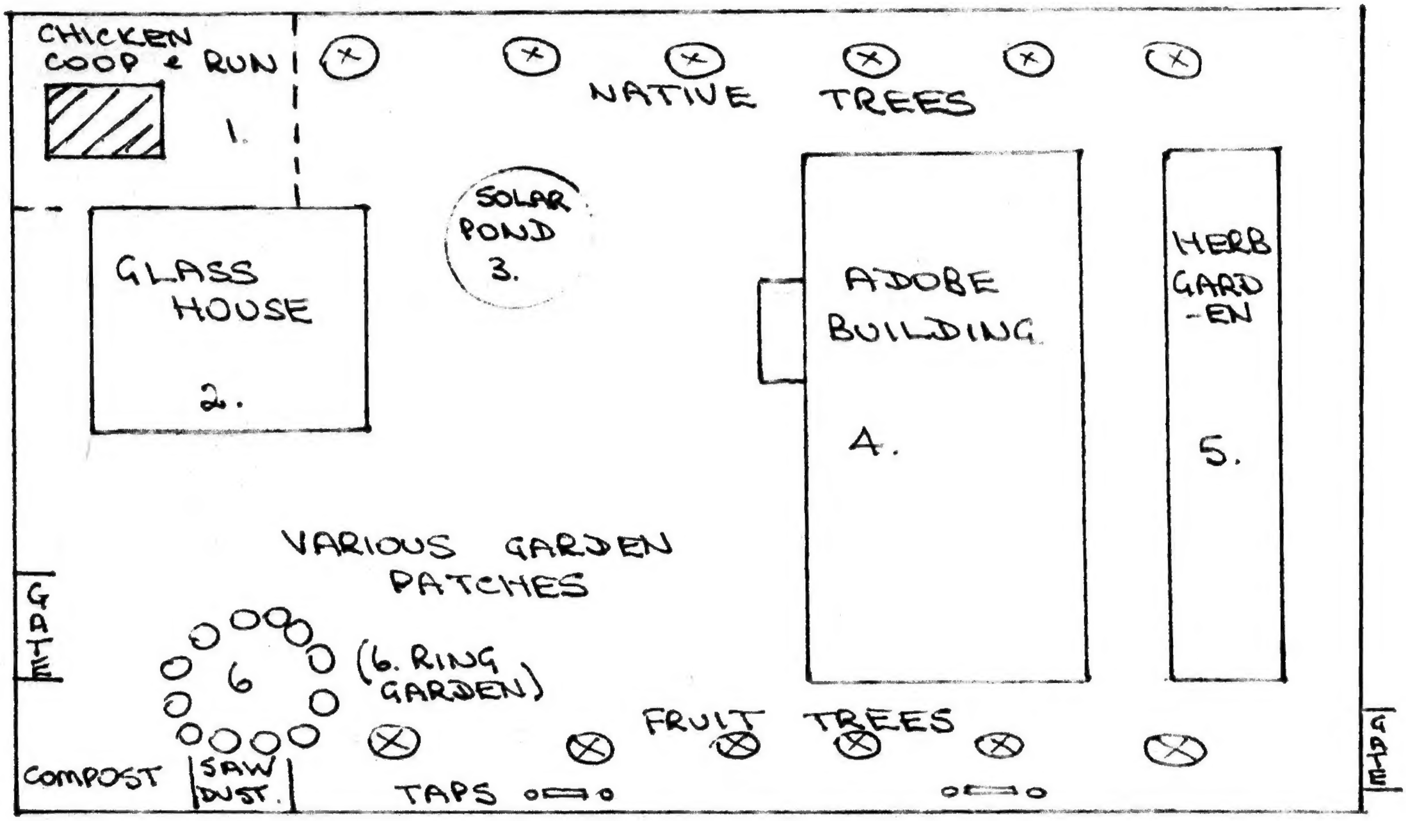
These are photovoltaic cells on the roof, windmills connected to a generator and a bike exerciser connected to a generation system. As well the building will have a solid fuel stove connected to a solar hot water panel system. Various submissions were made to fund these activities.

5. Herb garden.

Planted by students using a sheet mulch system. Herbs are to be used for propagation and for various uses decided by students. Some will be sold as a revenue raising function, as will vegetable seedlings and native plants. Certain herbs are currently being used for insect repellant properties in the vegetable patches.

6. Ring garden.

A sheet mulched vegetable patch using discarded car tyres as a heat source and heat retention device.



METHANE DIGESTER

Lavers Hill Consolidated School

BY KEVIN STAFFORD

What is a methane digester?

In brief a methane digester is an assembly of simple components — some of which may be salvaged from scrap metal or bought second hand — which at almost no cost can produce something useful (**gas**) from something not so useful (**organic waste**).

Even the remaining sludge may be salvaged as fertilizer!

The methane digester has a primary unit which 'digests' the organic waste in the absence of air and, by a series of chemical actions, produces the gas, which is usually held in some form of container until required.

In cold climates some method of heating the organic wastes in the digester is necessary, because the bacteria producing the gas operate best at around 35°C.

Methane, in common with natural gas, can be used for cooking, lighting, heating and for operating internal combustion engines in cars, tractors, boats and static power plants.

Planning our digester

With these considerations in mind, a small group of teachers thought it might be a good idea to construct a working digester at Lavers Hill Consolidated School and involve as many students, teachers and members of the local community as we could.

There seemed to be sound educational reasons for the project:

- For students to see the relevance and the practicality of producing gas from natural organic sources — and the necessity of conserving limited fossil fuels.
- That methane gas may be seen as a viable alternative source of energy by the students and the community in an area where fuel is readily available from dairies, piggeries, potato farms and discarded vegetable matter.
- As a practical addition to a Social Science Course for Level 10 which examines environmental issues and which has been taught since 1977.
- As a follow-up project to the construction of a vertical axis wind rotor in 1978 which was used at the school to demonstrate that a cheap machine could be used to pump water.

So, in the early part of 1979, Jim Wiadrowski and myself applied for a small grant from the Commonwealth Government Schools Commission. We were delighted to receive their financial assistance and commenced work on the project immediately.

Building the digester

The best site for such an apparatus seemed to be by the school pump house in a near level area — though in the months that followed we found this area was more *near* than *level!* Despite such minor difficulties, two slabs of reinforced concrete were laid and an 'A' frame to shelter the digester was chosen because it was simple to erect and could be used for solar heating at a future date.

A saddle arrangement was incorporated into the digester slab to allow agitation of the digester contents by rocking. In the meantime the gas holding tank was delivered and located on the slab.

The next stage was the brazing of three 44-gallon drums to form the digester generator. Fittings were then brazed onto the digester and a frame made for it. The unit was then placed on the saddle.

Heating for the digester (needed in our cold climate) was supplied by a conventional and second-hand 20 gallon hot water service attached to a copper pipe within the digester.

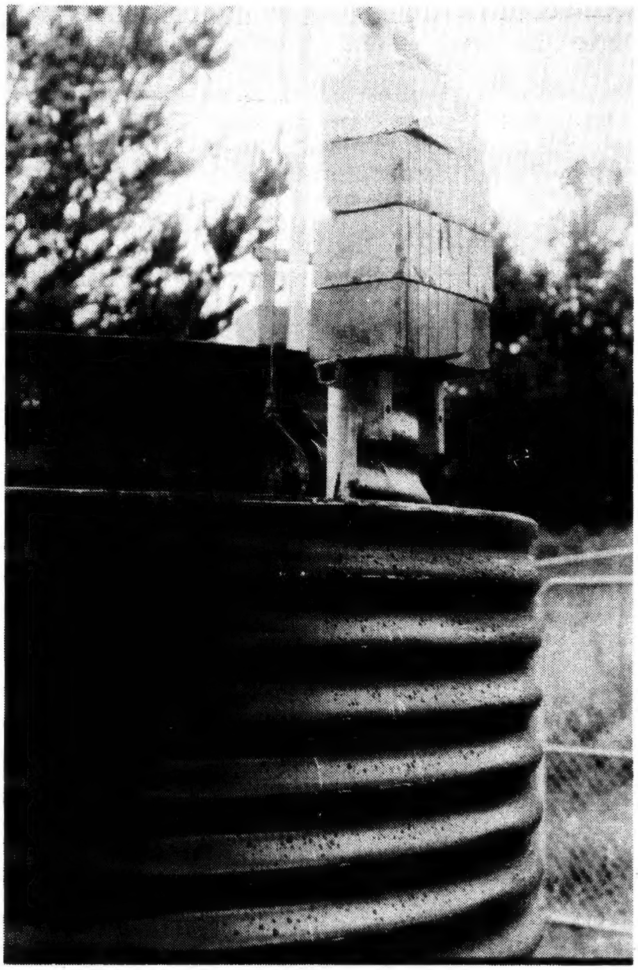
While the 'A' frame and holding tank were painted, work proceeded with attaching the remaining gas lines and additions such as a condensation trap and a water scrubber to clean the gas.

Finally, in September 1980, the digesting unit was ready for loading. A quantity of fresh cow manure was mixed in a 50 per cent ratio with water and fed into the digester.

During the next few weeks there was no evidence of activity in the digester until the holding tank began to rise slowly. When it was full (which took about eight days), the contents were released because it was felt that this would be mainly carbon dioxide.

Again nothing happened for a couple of weeks and then the holding tank rose again. This time the contents were partially released and a gas test was made in daylight. The gas ignited but there was no visible flame. A further test that night resulted in a blue flame about four inches long.

The gas line has now been extended some 25 metres to a site where an LPG gas cooking burner barbecue is located. The burner has been adapted for the gas collected from our digester.



The gas holding tank. Counter weights were used to aid the rise of the inner tank. In this photo the tank is in the "down" position. The digester is housed in an A-frame cover next to the holding tank. Gas passes through a scrubber between digester and storage.

The next stage in the project will be a solar system to heat the digester. The aim, of course, is a completely natural energy system. We plan to use the Savonius wind rotor we have already built, to pump the water through the solar system and digester. We propose using the waste or sludge for an organic herb and vegetable garden.

From first to last, the project has been a school one with students working whenever timetables and other commitments permitted. The rest of the work has been done by staff at the school, with donations and some physical assistance from the community.

Late news

From the 500 gallons of raw, moist cow manure mixed with an equal quantity of water we have so far produced about 50 cubic feet of gas. The C.S.I.R.O. says this amount of manure should produce about 200 cubic feet of gas under optimum conditions, so here's hoping!

Land Lines is a free service for **Earth Garden** *readers, who must give their full name and address as proof of their sincerity. They also have the responsibility to thoroughly check all deals.*

Please keep listings to 50 words, plus name and address.

We are a young couple with two babies, interested in buying land in northern New South Wales. Until then we'd like to rent a cottage or any livable abode there, in peaceful surroundings. We have experience in organic gardening, bees, fruit trees and animals. Can you help us?

Please write to Kym Gregory & Janice Mere, Box 14, Forest Range, South Australia, 5139.

We are seriously interested in establishing a self sufficient communal way of life for ourselves and those who wish to join us. We are interested to know of established communes, or to meet people like ourselves ready to start from scratch.

Sincerely, Idvia Mosterin and Noel McGeough, C/- Cooke Point Caravan Park, Port Hedland, Western Australia 6721.

land lines

Last year we came looking for a small farm in the Warrumbungle Ranges area of north-west New South Wales, but the only place available was 'Tibuc', 5000 acres of beautiful land ranging from fertile creek flats to vertical cliffs. We bought it and we are subdividing it into 24 lots of 50 to 800 acres. Most lots have permanent water, mainly springs, arable land and timbered slopes. Some adjoin the National Park, some are fairly well developed and others are isolated and rugged.

Tibuc is 10 miles from Coonabarabran on the sealed road to the Warrumbungle National Park. The first lots will be on the market in 1981. Prices will range from about $12,000 to $25,000, excluding the homestead block. Interested people could call in and try our pecan nuts, or write.

Robyn Keech and Tony Marx, 'Tibuc', Coonabarabran, NSW, 2857. Phone: (068) 42 1740.

We are two people wanting to buy or go shares in a few acres of land, preferably with some bush on it. Our aim is self-sufficiency and a non-polluting lifestyle. We have $7000. If there is anyone out there who can help us, please write to:

Keith and Lisa Smith, 32 Marsh Street, Mackay, Qld, 4740.

We wish to establish a sub tropical or tropical orchard on our land on the Sunshine Coast. We would welcome information from readers on names and possible sources of supply of seeds, cuttings or plants or rare or unusual tropical fruits, nuts and spices that would be of interest to southern visitors.

Please contact R. and D. Lawrence, 5 Bangalay Crescent, Rivett, ACT, 2611.

We are a family of five — Ted 37, Heather 30, Stuart 11, Simon 8, Adam 20 months — wishing to join an established community or a tenancy in common situation on the north-east NSW coast. I have been involved with metal trades for 20 years and have my own forge and blacksmith's tools. I have been an organic gardener and kept chooks.

We will be travelling up about December and will need some form of accommodation to rent until we find a place and build shelter. I would be forever grateful if *Earth Garden* readers could write to us with any suggestions or offers.

Ted and Heather Valladares, 8 England Avenue, Pt Noarlungs, SA, 5167.

We are looking for other "wimmin" (spelling deliberate) to share in an attempt at self-sufficient co-operative farming in the Barossa region of South Australia.

If interested, write to Robin Duke, Erna Haas, PO Box 205, Tanunda, South Australia, 5352.

Land wanted: I am a self-employed man, 36, looking for any cheap house or land within commuting distance of Sydney (I can do almost all repair work myself), or over 400 acres of rough, hilly, mostly timbered land with at least a small arable patch, permanent water and legal access, or a cheap, small, old house, above or below ground in or near a small country town. I spent my first 22 years on a farm and want to get out of the rat race.

The general area should be in or near the Dividing Range in Queensland or NSW. Serendipity appeals to me, so if you have something really weird, unusual, in a different area, but cheap, it won't hurt to contact me.

Ward Green, PO Box 77, Enfield, NSW, 2136. Phone (02) 642 7263.

We are vegetarians, interested in alternative life styles and self-sufficiency. We are seeking a secluded block of land, 30 to 100 acres on the eastern side of the Dividing Range. Services are not needed, but we would like good soil, water and a frost-free area if possible. We would consider shares as long as the holding is specified.

Also, is there anyone in the north of NSW who could give us a place to put our small caravan in return for work or nominal rent while we look for land?

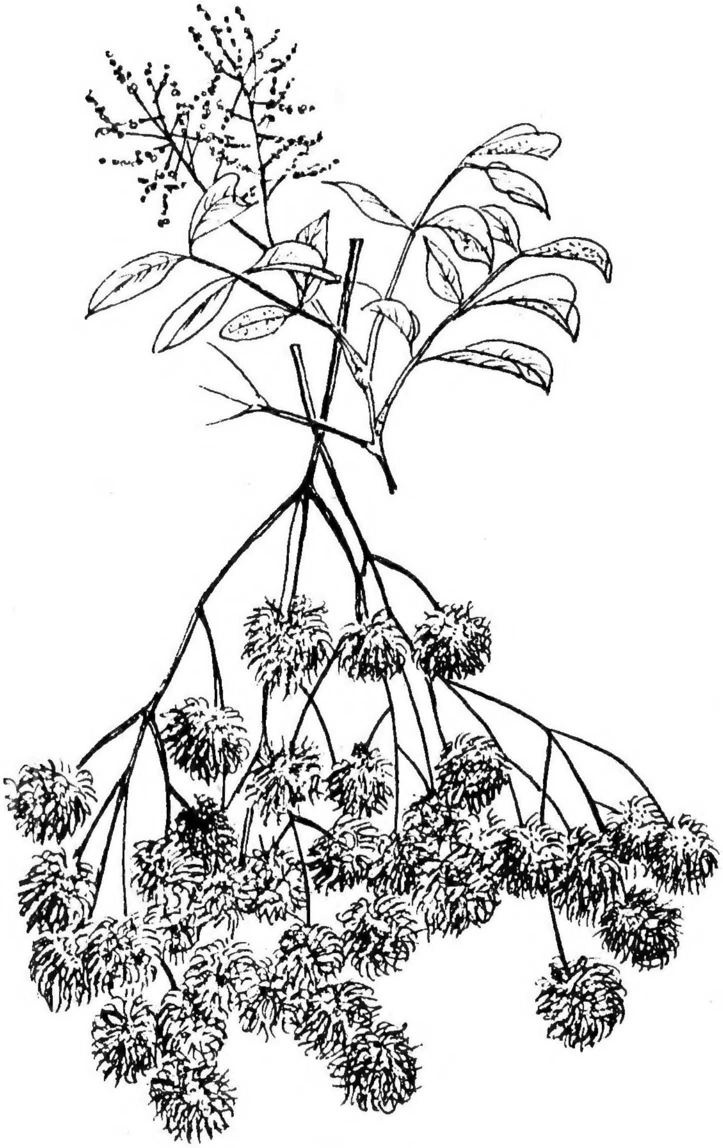
Stuart and Vikki Blatchley, 2 Cambridge Avenue, Dee Why, NSW, 2099.

We are a couple in our thirties with two youngsters, keen to settle in southern Australia. We would like to buy, for cash, between 10 and 20 acres of good land with (if possible) a stone building already in existence, with water available, electricity not essential, remote area no problem. We plan to visit Australia in April/May, 1981 but would like to hear from anyone who may have or know of such a plot for sale.

Best wishes, Wendy and George Kay, The Rapids, Ballysodare, County Sligo, Republic of Ireland.

We, Adrian (40) and Barbara (35) with 6 children, are looking for a family to share 247 acres of bushland with permanent water near Elands, via Wingham, NSW. Half share is $7000. We are hoping to meet people in a similar age group, preferably from a suburban-type background, who are making the transition to an alternative lifestyle and who are interested in becoming self-sufficient on the land.

Adrian and Barbara Harkin, 11a Beaumaris St, Enfield, NSW, 2136. Phone (02) 747 4489.



Rambutan

This is the third and concluding section of a series covering more than 100 food plants suitable for growing in tropical Australia, researched, written and illustrated by Len Muller. These include perennial tree crops, leafy greens, legumes and annual plants which will grow above a line north of Alice Springs from Carnarvon in Western Australia to Coffs Harbour in New South Wales.

Some of these useful plants are native to Australia, but many are being introduced from exotic places like the West Indies, Africa, South America, South-East Asia, Papua New Guinea, Hawaii and other parts of the Pacific where the climate is similar. The first segment was in **Earth Garden 27** and the second in **Earth Garden 28.**

FOOD PLANTS FOR TROPICAL AUSTRALIA ~PART 3

Story & Drawings
By LEN MULLER

PINEAPPLE *(Ananas cosmosus).*

Although normally a specialist crop, pineapples can be grown by the amateur who has a sunny position and is willing to study the correct cultural methods. They are fairly easy to grow once you know your plants and the right fertiliser schedule. Very few pests. A relative of the pineapple, pinuela *(Bromelia pinol)* bears a bunch of pinkish long juicy berries.

RAMBUTAN (*Rephelium lappaceum*).

Native of Malaysia and possibly the Malay Archipelago. Cultivated for a long period in south-east Asia and many selected varieties are available. Many seedlings, perhaps thousands, are now growing in Australia and some have been fruiting in the Cairns and Mossman area for many years. Rambutan could become the most popular fruit in North Queensland.

A relative of the litchi, the tree bears bunches of fruit about 5 cm in diameter, often brilliantly coloured red, red and yellow, green and yellow, or all yellow. The skin is covered with coloured rubbery hairs and a bunch of fruit looks better than a Christmas decoration.

Under the skin, which is thick but readily peeled away, is a white translucent fruit the size of a large litchi, containing an oblong seed. The quality of a rambutan is not only governed by its flavour, but also by the size of this seed and (more important) whether or not the flesh separates cleanly from the seed. Throughout Singapore and Malaysia people insist that the best rambutans come from Penang. They are usually freestone fruit there, both yellow and red skinned.

Despite the fact that the native home of the rambutan is a country without a distinct dry season, rambutans are quite hardy and actually seem to stand up fairly well to a dry spell, as long as some water is available. Their full adaptability is yet to be discovered. Although grafted varieties will no doubt come to be preferred, the results achieved by people who have grown seedlings to fruiting size so far indicate that it is well worthwhile planting them.

RUNGIA (*Rungia* species)

A member of the acanthus family, this New Guinea vegetable was only recently introduced to Australia. The young shoots are eaten raw or cooked. Grows into a small bush which takes root where it touches the ground. Easily propagated by these layers.

SALAK (*Salacca edulis*)

From Indonesia. A trunkless, clumping palm with 4 metre long very spiny leaves Although the whole genus *Salacca* is said by palm authorities to bear male and female flowers on separate plants, controversy surrounds this, as well as the matter of clumping. It is probably best, however, to plant about ten of them about 1.5 m apart, wait until they bear and decide then who is right. Planting only one in the home garden could prove a useless exercise.

The fruit is one of the world's best and easy to grow given ample water, nutrients and light shade. The best salak comes from Bali, a fact which nobody disputes. It is said that salak will not fruit in Singapore, which does not have a distinct dry season, so Singapore has to obtain its salak fruit from the Riau Archipelago and Java.

Bali, particularly the western end, has a dry spell at about the same period as Northern Australia, so it could turn out that for once lack of rain could be an advantage. However, salaks normally grow in the reasonably wet lowland tropics in rainforest valleys and plains.

SANTOL (*Sandoricum Koetjape; S. indicum*)

Also spelled *sandol.* A popular fruit in the Philippines and grown also in many parts of south-east Asia.

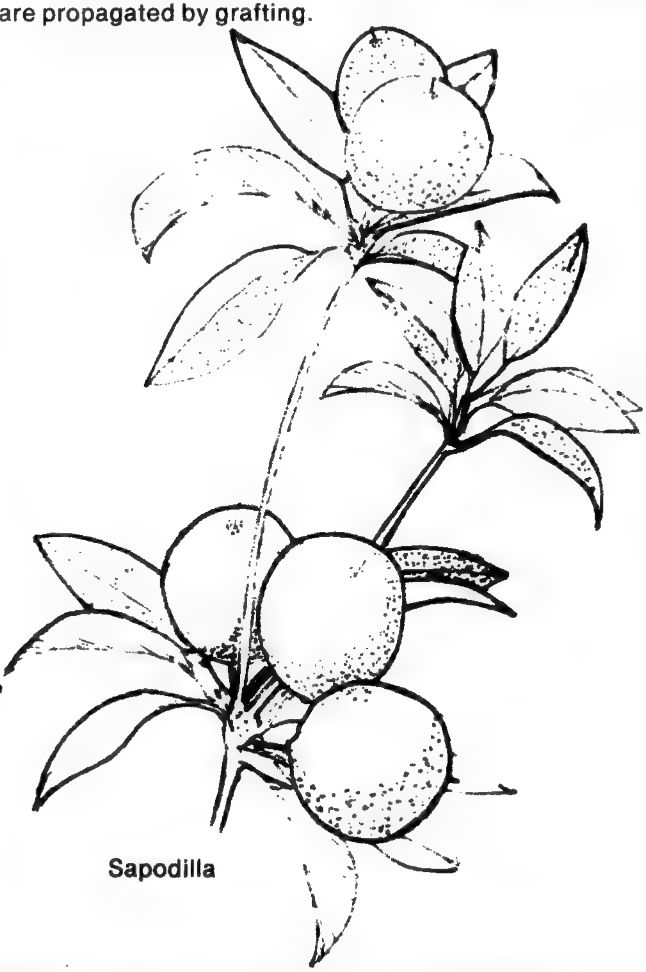
The plant is extremely variable, not only in fruit and in fruit colour (red or yellow) and size (up to 6 cm diameter) but also in leaf shape, colour, size, furriness, growth habit and so on. All santols are beautiful trees to look at, withstand hard conditions and a variety of soils and may be grown from seed, marcots or grafts.

A strange-tasting, almost woolly texture, but they will probably prove popular because of the beauty of the tree. Fruits may be spiced, dried or candied.

SAPODILLA (*Manilkara zapota; Achras zapota*)

A fairly hardy, medium sized slow growing tree with grey-green leaves and a fruit with skin like russet coloured felt. The fruit, with the consistency of a pear, which it resembles in taste, contains several small seeds. Usually eaten raw, but must be perfectly ripe.

Slow growing from seed, some selected varieties are propagated by grafting.



Sapodilla

SNAKE BEANS (*Vigna sinensis* var. *sesquipedalis*)

Of ancient cultivation, dating back to Sumeria. Young pods, ripe seeds and leaves all edible. The dwarf variety from seed available in packets grows and bears well in all periods except during torrential rain or the dry hot weather.

Good pickled, awful frozen. Snake beans require a little more cooking than French beans (which, incidentally, seem prone to root rot). See the listing for asparagus bean in Plant Protein, *Earth Garden 27,* page 39.

SOURSOP (*Annona muricata*)

The soursop seems to be well suited both to Cairns and Darwin and will grow strongly in sun or shade if given sufficient water. The fruit is quite large — up to 30 cm long and 25 cm wide — and enclosed in green skin covered in soft spines. The fruit is borne on the trunk or main branches. A group of trees grown closely together bear well and are a pleasant sight.

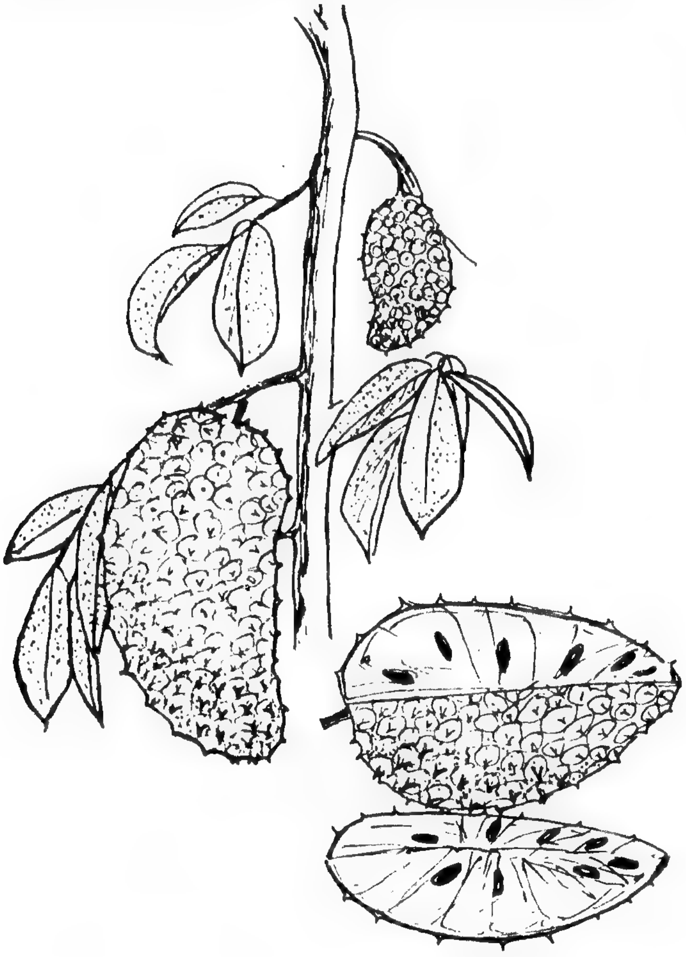
The fruit in flavour resembles lemon and vanilla in cotton wool. Once people become used to the strange texture, the soursop becomes a favourite fruit. It certainly has a most pleasing flavour and is sought after in tourist hotels for sherberts and drinks.

SOYBEAN (*Glycine max*)

Unfortunately few varieties of soybean are available in Australia. The plant grows well and bears at various times of the year in Cairns and the green beans are a good vegetable. Beans for drying can be readily produced.

Later it is possible that the home food technology for making soy sauce and miso will develop, but until this happens soybeans will be purchased from health food stores and used in basically western ways which don't do them justice.

Soybeans may also be germinated for bean sprouts in the same way as mung beans, but they tend to ferment rather easily in the hot weather. Grow fresh seed from health food stores. See the listing for soybean in Plant Protein, *Earth Garden 27,* page 46.

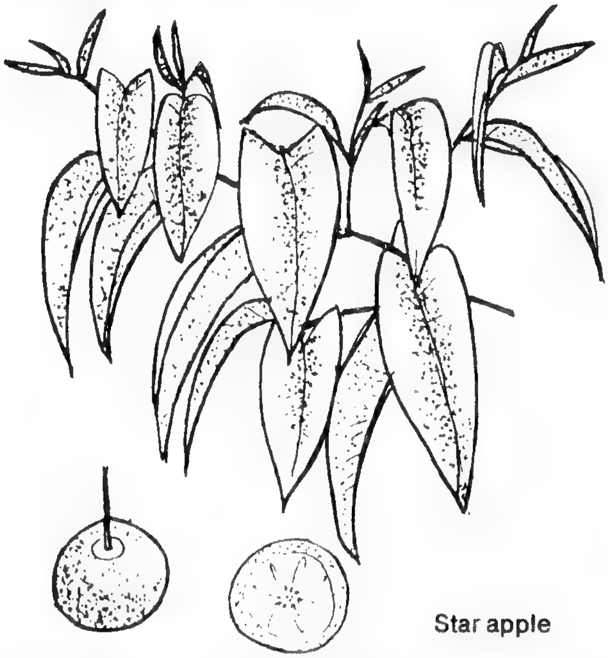


Soursop

SPANISH LIME (*Melicoccus bijugatus*)

Also called *genip* or *mamoncillo*. A tree recently introduced from Central America and the West Indies. A relative of the litchi and rambutan, the fruit, borne in bunches, contains acid, juicy pulp around a single seed.

As there are separate male and female trees, several (about six) must be grown to get fruit. In Key West they are often grown in a clump. The tree has light green leaves of an unusual shape which make it worth growing for ornament as well as fruit.



Star apple

STAR APPLE (*Chrysophyllum cainito*)

A native of the West Indies and a popular fruit there. The skin may be purple or green and the flesh white or light purple, depending on the variety. This tree, with its bright green leaves with red felty undersides and a weeping habit, is sure to become popular with landscape gardeners. It appears to prefer clay soil and needs ample water while young.

STAR GOOSEBERRY (*Phyllanthus acidus*)

Called *chermai* in Indonesia. A very acid fruit, but when used in the right mixture with sugar or a sweet fruit such as mango or banana, makes a delicious dry wine resembling hock. With its close relative the Melaka (*P. emblica*), it comes close to being the richest source of natural vitamin C known. In Indonesia it is often included in fish recipes. Both the star gooseberry and the melaka can be used to make jam, but people often find the seeds are a problem.

STRAWBERRY (*Fragaria* species)

Ordinary strawberries, if given ample mulch, compost, fertiliser and water, grow well in Cairns and Mossman. Some light shade may be necessary in hot dry weather.

SUGAR PALM (*Arenga pinnata*)

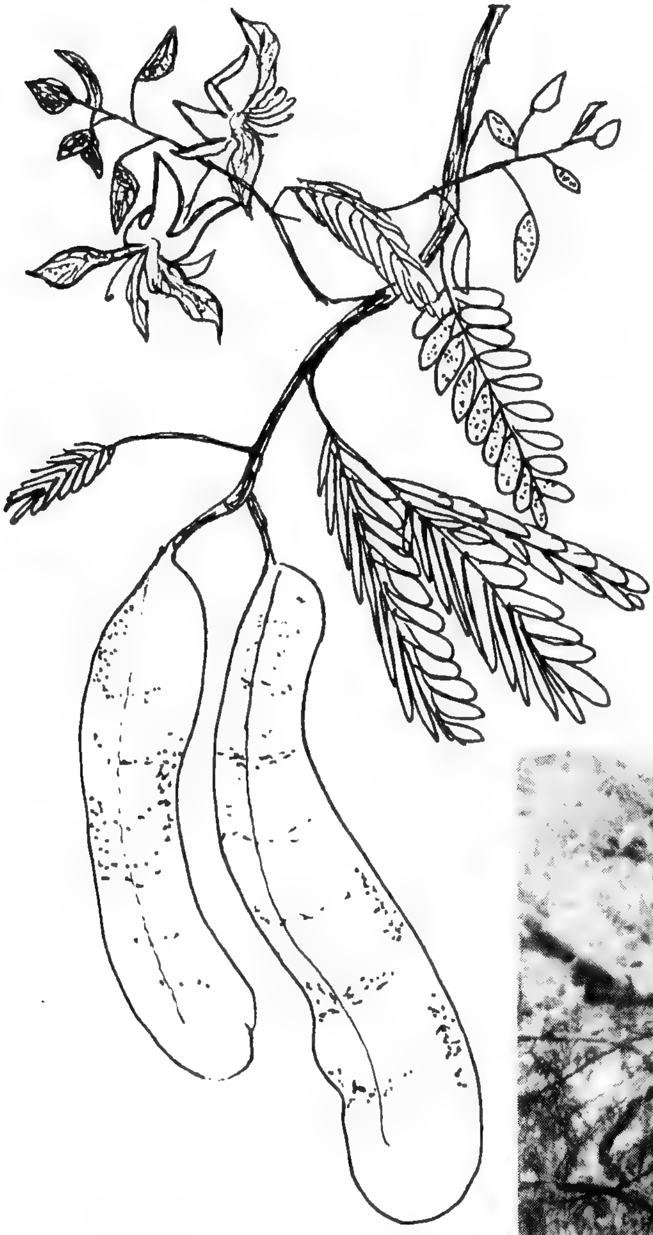
The source of a dark treacly sugar called *gula jawa* in Indonesia or *gula melaka* in Malaysia. The sap from the stem of a cut off flowering shoot is collected in a length of bamboo and boiled down to concentrate it.

Delicious with banana fritters (*pisang goreng*). For those who aren't crazy about sugar, the collected sap can simply be fermented and drunk.

SWEET POTATO (*Ipomoea batatas*)

A well known vegetable, with about ten different flavoured and coloured varieties available. Types with rampantly growing vines are useful in that they provide good fodder and tender shoots are good greens which may be eaten chopped and braised or chopped and mixed with wholemeal flour, bean sprouts and flavourings to make an excellent vegetarian rissole.

Bandicoots tend to enjoy sweet potato and wallabies eat the vines, so the sweet potato plot may have to be fenced. Perhaps you could grow some plants outside the fence as well if you are soft for wild animals, as I am.



Tamarind tree (at right) and pods (above).

TAMARIND (*Tamrindus indicus*) (*asem*)

Like the coconut, the tamarind is one of the great trees of life.

Even in Cairns, where curries and spicy dishes are not yet a way of life, few tamarinds rot on the ground. People eat them as raw fruit, enjoying the sharp acid taste. They collect them to make tamarind water for drinks and for cooking and they peel them and dry them in the hot dry pre-wet period, which is all that is needed to keep safe from mould and bacteria, as they are strongly acid and also contain sugars which, when concentrated in drying, act as natural preservatives. The young leaves and flowers can be eaten raw or cooked.

The tamarind tree is very beautiful and it shelters people and plants in its rich green shade. It is also wind and cyclone resitant. The trees have very wiry branches which resisted even Cyclone Tracy in Darwin.

Don and Chris Gray of Mossman make a delicious preserve called sugared tamarinds. Shelled tamarinds are put in a bottle in layers, with layers of sugar in between, the lid screwed on tightly, and kept for three months.

Tamarind bark is used for tanning, the leaves, pods and flowers for dyeing cloth, the seeds as a commercial source of pectin, glues and varnishes and the young leaves and flowers are edible.

You can hold a conference in the rich shade of the tamarind, which could shelter 50 people.

TANNIA (*Xanthosoma* species)

Also called *cocoyam* or *dhania.* The 'coco' refers to the fact that side corms, rather than the main corm are the parts eaten. Leaves are also edible when cooked.

Tannia is very similar to taro in taste and texture and is used in the same way. Taro orginated in India, while tannia is native to tropical America and the West Indies. They are now commonly cultivated together in practical all parts of the tropics.

Like taro, tannia must be well cooked before eating.

Warning: Never confuse either *Colocasia* or *Xanthosoma* with *Alocasia* (Elephants ear), which contains so much calcium oxalate as to be almost poisonous. Of true taro and tannia you need have no fear if you cook them. Bandicoots will not eat either tuber, so there is no need to protect your plants against them.

Tannia or taro leaves are used to make a classical West Indian stew called *callalou.* The young leaves are combined with okra, green bananas, rosellas, ham or fatty meat, chillis and some herbs and spices (rosemary or three-in-one, cloves, nutmeg and cinnamon), just covered with water and cooked slowly for about three hours. Martin and Ruberte in *Edible Leaves of the Tropics,* give full details.

TARO (*Colocasia antiquorun; C. esculenta*)

Some varieties called *dasheen* or *eddoe.* A staple food of the Pacific, India, Egypt, Africa and the West Indies.

Requires ample water, swampy soil is best and ample nutrients. Tends to go dormant in colder, drier parts of the year. Corm is carbohydrate vegetable, side corms or shoots are kept for propagation material. Young leaves and stems of suitable varieties are boiled and eaten for greens.

Colocasia contains acrid calcium oxalate crystals in all its parts and must be cooked sufficiently for these to fume off in the steam, or break down into harmless substances. The first step in utilising taro (after peeling) is to boil it thoroughly for about 15 minutes, or when it first begins to disintegrate.

It can then be used in many ways, for example: mashed and used to thicken soups; mashed, mixed with egg and grated cheese and other flavourings, shaped into patties and fried; made into a souffle or puff by mashing, allowing to cool, mixing with egg yolk and oil,

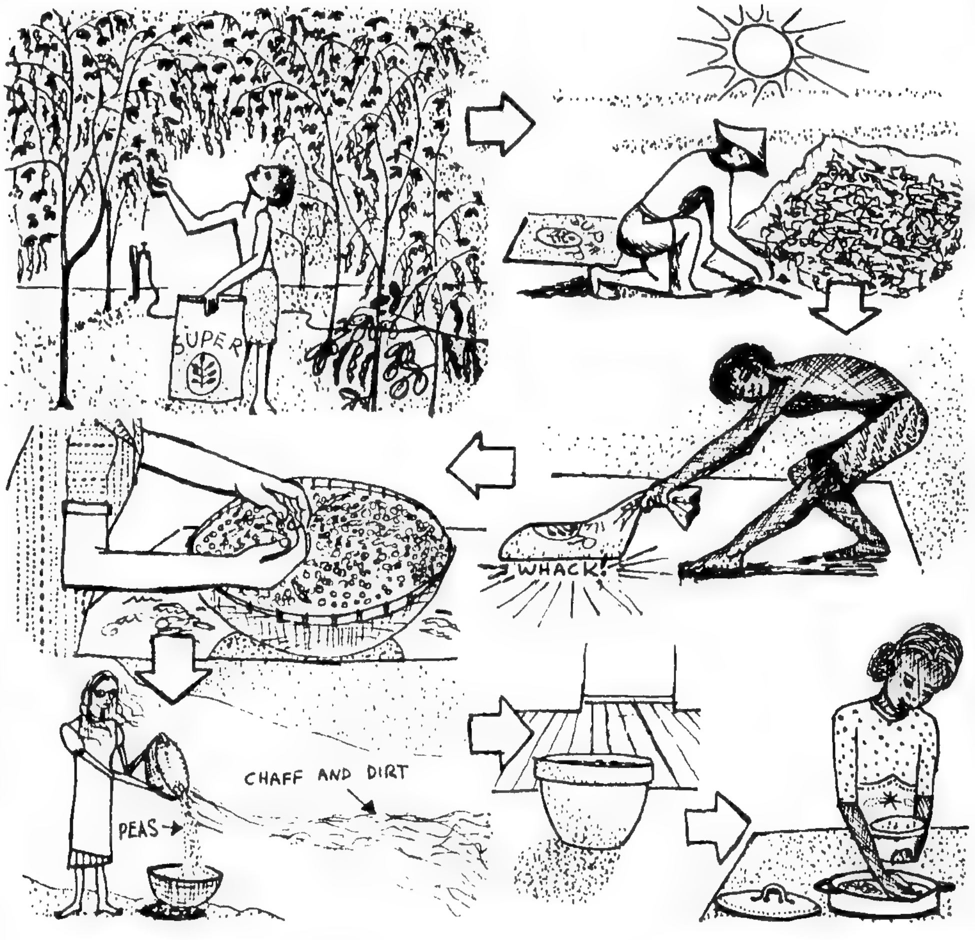
THRESHING & COOKING PIGEON PEAS

If you don't have the time and patience to shell them when they are green, pigeon peas may be harvested easily in handfuls of pods when they are dry and threshed in a matter of moments.

They are picked from the bush into a plastic fertiliser bag or any handy sack. If the weather is not hot and sunny, they should be dried thoroughly under cover.

Thresh them easily by half-filling the fertiliser bag with pods and slamming them hard on the concrete or against a fence post or something solid. Shake them in the bag and the peas will settle to the bottom.

Pick out the shells and any large pieces of husk and chaff and then winnow them in the wind by pouring them from one basket to another. Use Chinese baskets, which are readily available, about 500 mm in diameter, with round bottoms. They are excellent for all types of collecting, sieving and winnowing. Dried pigeon peas should be soaked in water for a day before using in any meal where dried beans are used. Keep them cool, or they are likely to ferment.



folding in beaten egg white and baking in hot oven; used in any rissole mixture where a filler is required.

By itself, taro is too dry for some tastes. In Polynesia it is generally pounded after cooking and mixed with water to become *poi*, a thick soupy liquid eaten with the fingers.

A *laulau* is a dish made of chopped taro leaves, mixed with diced salt pork wrapped in the leaves of *ti (Cordyline terminalis)* and steamed for about four hours slowly in a dry oven. *Chicken Luau* is made of cooked chicken meat, seasoned with a little ginger, garlic, salt and pepper, all mixed with boiled chopped young taro leaves and coconut cream.

Until you get used to taro, always make sure you use the youngest leaves and that they are well cooked. At first, taste just a little before serving to make sure you are doing it right. Calcium oxalate crystals are very unpleasant in the mouth and the effect can last several days. Once you master it there is no problem. Don't let children eat taro raw or rub it in their eyes.

THREE-IN-ONE (*Coleus amboinicus*)

A general purpose flavouring herb which seems to combine the flavours of thyme, majoram and sage, the classical culinary favourites in Queensland — hence the name. Good flavouring for mince rissoles and for casseroles containing mutton or fish. Three-in-one grows practically wild once established and is reasonably resistant to dry weather.

TOMATO (*Lycopersicon esculentum*)

Most varieties of tomatoes, even those claimed to be wilt-free, are almost impossible to grow on their own roots in the tropics owing to the presence of fusarium and bacterial wilt, plus nematodes, in the soil. Home gardeners overcome this by grafting tomato onto the common weed Devils Fig (*Solanum torvum*). See *Earth Garden 28,* page 27.

The soft tissue of the tomato, with its high water requirement, makes grafting fiddly and the success rate may be low at first, but the method does produce good, flavoursome tomatoes of your own favourite variety. Cherry tomato and hybrid called Epoch seem to be very resistant to wilt, but some plants may be affected.

TROMBONE PUMPKIN (*Curcubita moschata*)

Cultivated in Mexico 5,000 years ago, pumpkin spread rapidly throughout the world since the Conquest. Grows and bears in the Cairns area except in the hot dry period, when female flowers do not appear.

Easy to peel, makes good braised pumpkin cubes, curry, or can be baked or boiled. Do not overcook or the pumpkin becomes very squashy and not so appealing. Young shoots are good greens and when braised are known as *dragon's whiskers.*

TUMERIC (*Curcuma domestica*)

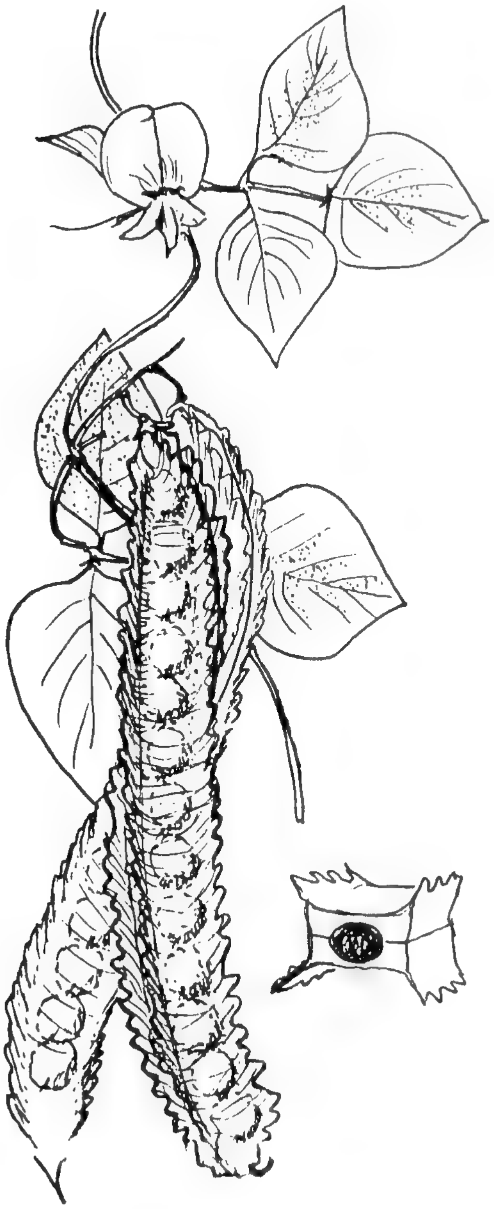
Tumeric is an easy plant to grow. It has approximately the same requirements as ginger, and, like many plants of the ginger family, goes dormant in the dry, cooler parts of the year. There are native curcumas in Australia, particularly in areas of monsoon forest in Cape York and the 'top end' of the Northern Territory.

The rhizomes are peeled and grated. They may then be used fresh, or dried for future use in curries or pickles. Many people believe that tumeric lacks flavour, but if it is used alone it has a remarkable flavour that is likely to grow on you.

If you are serving a chicken casserole with rice, stir about half a tablespoon of tumeric into the hot cooked rice just before serving. Tumeric is a showy plant, with a distinctive flowering spike which may be white or pink with yellow accents. Many people grow it under the name of ginger lily, not realising what it is. Tumeric can also be used for dyeing cloth.

WAMPI (*Clausena lansium*)

A hardy tree related to citrus and with similar cultural requirements. A good screening tree, which needs little attention and bears a fruit about the size of a grape, with juicy acidic pulp. Normally eaten fresh, but Sturrock in *Fruits for Southern Florida,* says that "good pies may be made from the pulp, the seeds not being disagreeable in cooking". Since seeds of any kind normally have a high food value, this is worth a try. Usually the seeds are discarded when the fruit is eaten fresh.



Winged bean

WINGED BEAN (*Psophocarpus tetrangonolobus*)

Called *seguidilla* in the Philippines and *kecipir* in Indonesia. A climbing bean with distinctive pods, unknown in Australia until recently. Grown in all tropical areas. Young beans and pods, young leaves and small tubers are all edible. Grows all year in the Cairns area, provided it receives some water.

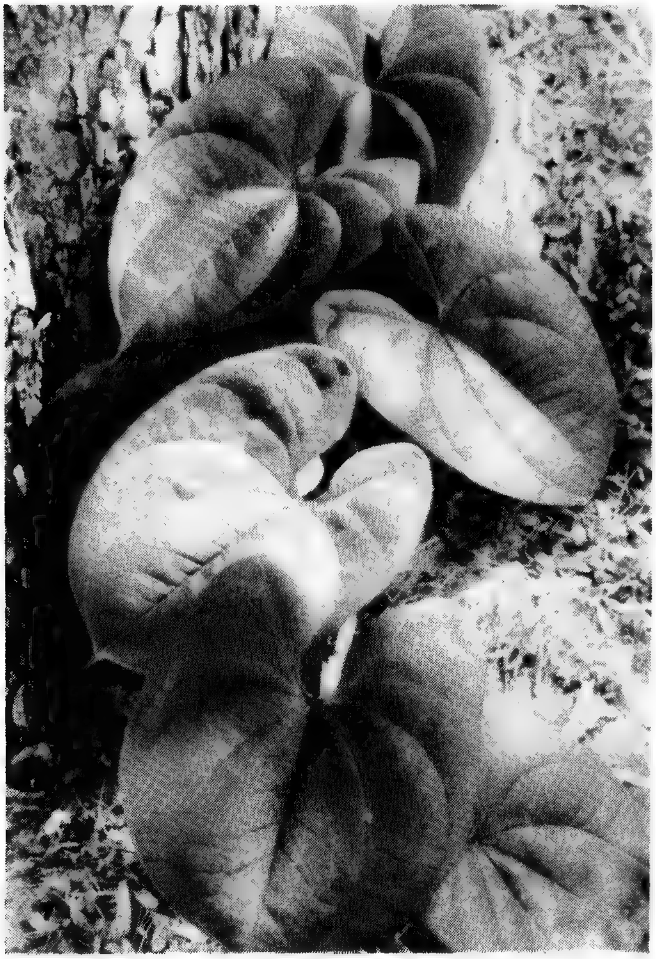
Pods are best picked young and not quite fully grown, cut across into bite-sized pieces and braised very quickly in a little oil. Overcooking spoils them and tends to make them limp and a little tough. Mature seeds should always be thoroughly cooked before eating. This is no drawback. Although many people are unaware of it, many types of beans, including soybeans, which are sold in dried form contain enzyme inhibitors which are destroyed in cooking.

Basically there are two different types of winged beans — those grown for beans and those grown for pods. Both types have been introduced to Australia and are beginning to be spread around among gardeners.

YAMS (*Dioscorea* species)

Two species of yams are grown — *D. bulbifera* and *D. alata.* Both are propagated by bulbils which form on the vine.

Native forms of *D. bulbifera,* which bear only small bulbils, are quite poisonous, but the cultivated variety, known as 'aerial potato' is safe to eat. Aerial potatoes weigh up to 500 grams each and have brown skin and light yellow flesh.



Yam *(Dioscorea alata)*, named after the Greek herbalist, Pedacius Dioscorides.

They make good chips or a boiled carbohydrate vegetable. They may also be included in casseroles. Unlike potatoes, they tend not to become floury, but remain firm when cooked.

The parent yam tuber of *D. bulbifera* in the ground is not normally eaten but cut up the following year for propagation material. It is, however, quite edible if not allowed to get too old.

D. alata is grown for its underground tubers. These are grown from the smaller, irregularly shaped tubers which form on the vine.

Probably the best way to grow yams is to dig a trench about two feet deep, in well-drained soil, fill it with light branches, grass, leaves and humus and plant the bulbils in pockets of soil in it. Supports about 10 feet high should be provided. These can be ropes up to a tree if it is accessible by ladder.

Other species of yams could be available, but it is best to determine the species before eating. Wild yams, particularly the wild species of *D. bulbifera,* should not be grown where poultry would be likely to eat the poisonous bulbils. Bandicoots do not seem to eat yams, although at times they burrow around them.

REFERENCE LIST

BOOKS

This is Len Muller's list of publications dealing with growing and using tropical foods (prices are quoted in Australian dollars).

Most of the books listed may be ordered at your bookshop, or obtained from a library. If writing to foreign countries, send a bank draft or international money order in the local currency, adding an extra dollar for postage.

Allen, B. M., *Common Malaysian Fruits,* Longman Malaysia Sdn, Berhad, 25, First Lakyang Road, Singapore 22 (1975). Beautiful botanical illustrations. Price about $10.00. Order from your bookshop or direct from the publisher.

Brissenden, R., *South East Asian Food,* Penguin Books, 1969. Darwin Garden Club, Darwin Gardeners' Gourmet Guide, 1979. Price about $2.50.

Department of Primary Industries, Queensland

The Queensland Agricultural and Pastoral Handbook, Vol. 11, Fruit and Vegetables (1961) available from D.P.I., William Street, Brisbane, Qld 4000. Local D.P.I. offices also publish monographs and notes on tropical foods. Call in, or write, asking specifically for what you are interested in. These articles, based on local research, are good and many are issued free of charge.

Flora Indonesia Series

Several very good booklets in Indonesia with colour photographs, published in 1976/77 by P. Y. Karya Nusantara Cambang Jakarta 111, Jalan Patrice Lumumba No. 20, Jakarta. They cover: Umbri-umbian (root vegetables), Rempahrempah (flavourings), Sayur-sayuran (salad vegetables), Kacang-kacangan(beans), Buah-buahan (fruit) and Tanam Penyegar (beverages and stimulants). Price about $1.00 each from the publisher, or major bookshops in Jakarta or Jogyakarta.

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Hedrick, U. P., *Sturtevants Edible Plants of the World,* Dover Publications, New York, 1972. No pictures, but a wealth of useful information.

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Liklik Buk, Wantok Publications, P.O. Box 1982, Boroko, Papua New Guinea. Price about $10.00.

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Martin, F. W. and Ruberte, R., *Edible Leaves of the Tropics,* Mayaguez Institute of Tropical Agriculture, Mayaguez, Puerto Rico, seond edition, 1979. A revolution in eating habits begins. Write regarding availability.

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Masefield, G. B. et. al., *The Oxford Book of Food Plants,* Oxford University Press, 1975. Contains temperate climate plants also, some good colour pictures. Price about $15.00.

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Menninger, E. A., *Edible Nuts of the World,* Horticultural Books Inc., Stuart, Florida, 1977. Price about $20.00.

Miller, C. D., K. Bazore & M. Bartow, *Fruits of Hawaii,* University Press of Hawaii, 2840 Kolowalu Street, Honolulu, Hawaii 96822, USA. Price about $10.00.

Mortensen, E., *Handbook of Tropical and Subtropical Horticulture,* Agency for International Development, P.O. Box 353, Norfolk, Virginia 23501, USA. Write for latest price and postage.

National Academy of Sciences: *Underexploited tropical plants with promising economic value,* 1975. Write to: Commission on International Relations, National Academy of Sciences, NRC 2101, Constitution Avenue, Washington DC 20418, USA. Price about $12.00.

Also, another book, *The Winged Bean,* a high-protein crop for the tropics. Same source.

Ochose, J. J. & Bakhuizen Van der Brink, R. C., *Vegetables of the Dutch East Indies,* A. Asher & Co. B.V., Keizersgracht 526, Amsterdam 1002, The Netherlands, 1977. Costly (about $100.00) and soon to be reprinted.

Parkinson, S. & Stacy, P., *A Taste of the Tropics,* Mills & Boon, London, 1972. A cookbook from Fiji. Price about $10.00.

Popenoe, W., *Manual of Tropical and Subtropical Fruits,* Hafner Press, 866 Third Avenue, New York, 1974. Price about $20.00.

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Richardson, M. W. (Ed.), *Tropical Fruit Recipes,* Rare Fruit Council International, 3280 Sth. Miami Avenue, Miami, Fla. 33129, USA.

Samaka Guide to Homesite Farming, Samaka Service Centre, P.O. Box 2310, Manila, Philippines. About $3.00 to $4.00 — a bank draught of $5.00 will cover postage as well. See Access 1, *Earth Garden No 22-3,* page 48.

Schery, R. W., *Plants for Man,* George Allen and Unwin, London, 1954. Price about $30.00.

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Usher, G., *A Dictionary of Plants Used by Man,* Constable, London, 1974. Price about $20.00. Not essential.

Wilson, E. G., *A West African Cookbook,* Flare Books, c/- Avon Books, New York, 1972.

Periodicals

Harvest

Quarterly, Kina 4.00 per annum, plus postage. Send bank draught in Kina to Harvest, P.O. Box 2417, Konedobu, Papua New Guinea.

Possibly the best available magazine for food growers in North Australia.

Rare Fruit Council of Australia Newsletter

Bi-monthly, membership of $10.00 per annum includes the newsletter and published leaflets. P.O. Box 707, Cairns, Queensland 4870. Full of interest and information on introduced and native fruits. The Council's mottos is: Eat your landscaping.

Subtropic Newsletter

Geraventure Corp., P.O. Box 2131, Melbourne, Florida 32901, USA, $3.00 per annum.

Winged Bean Flyer

Twice annually, $US3.00 from International Council for the Development of Underutilized Plants, 18 Meadow Park Court, Orinda, California 94563, USA. For winged bean growers and enthusiasts.

TROPICUS NURSERY

Tropicus Nursery (Andris Stelmachers), PO Box 505, Darwin, Northern Territory, 5749. Retail and wholesale mail order. Send long envelope SAE for price list of exotic fruit trees.

A wide range of food plants including wampi, tamarind, acerola cherry, cinnamon, mangosteen, several eugenias, five corner, bilimbing, Barbados cherry, mango and guava.

Coconut matting

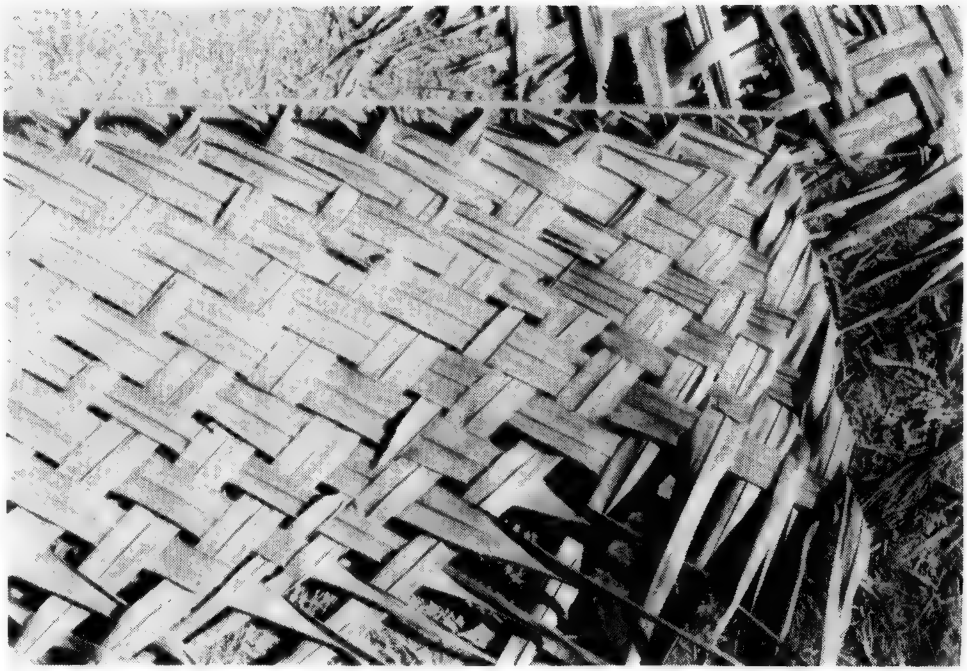
Story & Illustrations
By LEN MULLER

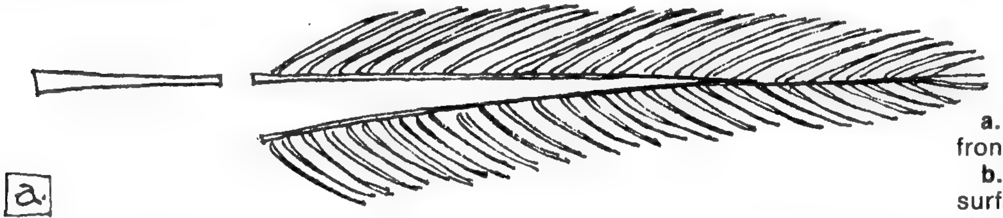
A basic item made by people living in areas where coconuts grow is the woven panel. Two of these may be made from one frond.

Panels may be used for walls, ceilings, screens, or for giving a tropical atmosphere to the front of your 'island' bar. They are free, temporary building materials and, when disposed of, decompose to useful humus.

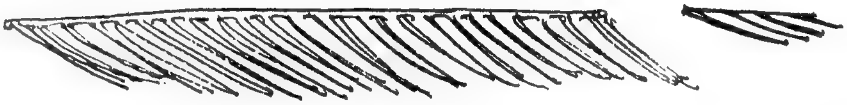
To make

Select a mature green frond in good condition. Do not cut more than two fronds from each palm or you will retard growth and production of the nuts. Follow the steps shown in the diagram.





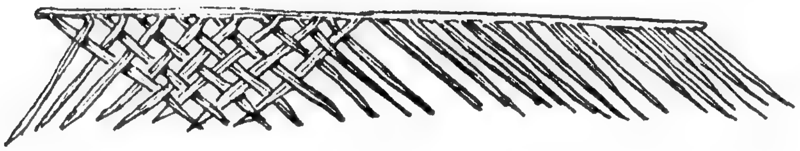
a.



b.

a. Cut petiole off frond and split frond along midrib.

b. Place half frond on working surface, midrib towards you. Cut about 300 mm from tip of frond.



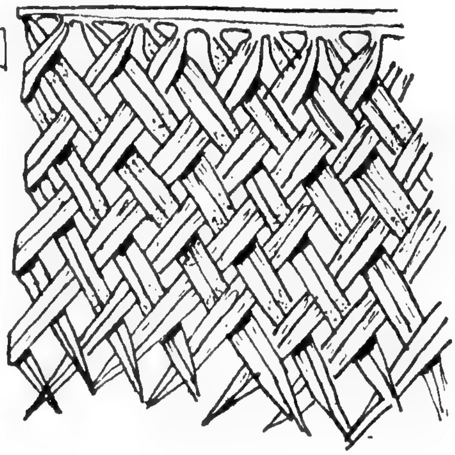
c.

c. Bend second leaf over first, fourth leaf over third and under first, sixth leaf over fifth, under third and over first. Continue this pattern until half-way along frond and then do the end according to **d.**

d. Detail of end.

Continuation

Finish weaving over and under according to **c.** and then finish other end according to **d.**



d.

MANGO MANIA

By MARY THIRY

Years ago, when I was still at school, no one ever had to ask where I was during the Christmas holidays. All my waking hours were spent sitting up the mango tree, gorging myself on that luscious fruit, with juice running down my chin and neck, along my arms and dripping off my elbows. What bliss!

Those days are long gone, so is the memory of just how many fruit I could eat in one day, but my mania for mangoes still remains.

Mangoes are easy to grow from seed and well worth the effort for the delicious fruit, the magnificent tree and the bonus of shade. The height of the tree varies from 12 to 15 metres, but I recently read a report of one measured in Brazil which was 35 metres high.

Seeds strike readily if the outer covering or husk is removed before planting. In a majority of seeds, you will find a little white grub (looks a bit like a maggot) which develops inside the husk, feeding on the seed and eventually becomes a small black beetle.

These grubs do not affect the quality of the fruit, but if they aren't removed before planting, you have little chance of a tree growing.

Husks are easier to open if left a day or two after eating the fruit and then levered open, after sliding a knife along the concave edge. You have to find and kill the grub or beetle (sometimes both) but don't stop looking after finding one as there are sometimes several.

Out of 20 mango seeds I recently dehusked, three were completely eaten, four were perfect and the rest up to half eaten. All of the 17 I planted came up. I think I would have been lucky to get up the four perfect seeds if I had planted with the husks still on.

Mangoes produce polyembryonic seeds, which means that several trees may grow from one seed, so you will usually get a tree as long as part of the husk is still good.

Plant the dehusked seeds in warm, damp sand, concave side down and cover with an inch or two of sand or compost. Mango trees take only about three-to-four weeks to start coming up. I suppress all but the strongest plant from any one seed, but I guess you could divide the seed and root system and gain more than one tree from one seed.

Mangoes can't stand frost, but grow well in almost any soil with good drainage. Of course they do best in deep, fertile loams. A seedling tree will commence to bear in about five-to-six years. The only other essential is a dry spring because the fruit won't set if it rains heavily when the tree is flowering.

Mulch your trees well and give them regular feedings of liquid manure and/or compost at least four times a year (December, February, June and September).

The mango contains as much vitamin A as butter and is a good source of energy as it has about 15 per cent sugars. It can be used in pickles, chutneys, curries and deserts, but I like it best fresh. Once you have surplus fruit, try some of these yummy recipes, but remember you will have to compete with parrots, possums and flying foxes. *Happy mango munching!*

Mango mousse

1 tablespoon gelatine, ½ cup water, 1½ cups mango pulp, ½ cup orange juice, 2 tablespoons rum (optional), 2 egg whites, 2 tablespoons sugar, ⅔ cup cream, whipped.

Soak the gelatine in water for five minutes, then dissolve over hot water. Combine mango pulp, orange juice and rum, mix in the gelatine and chill until slightly thick. Beat egg whites until peaks form, add the sugar gradually and beat until thick and glossy. Whip the cream. Fold cream and egg whites into mango mixture. Chill.

Mango ice cream

2 cups mango pulp, juice of 1 lemon, ¾ cup sugar, 2 eggs, separated, 2 tablespoons sugar, ½ teaspoon almond essence, 1 cup cream.

Mash mango pulp, add lemon juice and sugar, place in tray and freeze for one hour. Beat egg whites and sugar until stiff. Fold beaten egg yolks into the whites. Beat cream until thick and fold into the egg mixture. Beat slightly the frozen pulp, add cream and egg mixture and the essence. Freeze, stirring once or twice during the process.

Mango sherbert

1 cup sugar, ¼ kg mango pulp, 1½ cups milk, 3 tablespoons water, 1 tablespoon lemon juice, 1 beaten egg white.

Mix sugar and water and stir over gentle heat until a drop of syrup can be formed into a soft ball. Cool slightly, then slowly add the mango pulp to which the lemon juice has already been added. Fold in beaten egg white. Freeze until ice crystals begin forming around the edge of the tray. Whip with a fork until fluffy. Serve immediately.

A hermit's garden

Bruce Andrews is 68, fit, white-bearded and suntanned and doesn't mind being known as "the old hermit".

He lives in a vast tropical and ornamental garden which he has created at Mareeba in North Queensland in a landscape filled with trees, shrubs, palms, climbers, creepers, bulbs, ferns, orchids, fruits, hibiscus, frangipani, birds, flowers and butterflies.

This dense and colourful garden, which already covers 4½ acres, is called The Mary Andrews Memorial Gardens as a tribute to Bruce Andrews' mother who was, he says "a grand old lady, who loved children and plants". Money raised through the garden goes into a Trust which benefits the North Queensland Society for Crippled Children.

Working by hand, usually with a young assistant, Bruce Andrews since 1952 has planted 30,000 bulbs and shrubs, built-up the soil with organic treatment of mulch and manure, made bush houses, bridges of bamboo and a wishing well of mudbricks. His vision is to extend the horticultural landscape to cover the full 10 acres of land available.

"We're hoping that the ground here can never be sold", says Bruce, "even if Mareeba becomes a town of 50,000 people with these botanic gardens right in the middle of it".

The Mary Andrews Memorial Gardens are open seven days a week, from 8.00 am to 5.00 pm. They are situated across Granite Creek bridge on the Biboohra Road, Mareeba. There is a nursery with a selection of advanced trees, shrubs, palms, fruit trees and creepers for sale.

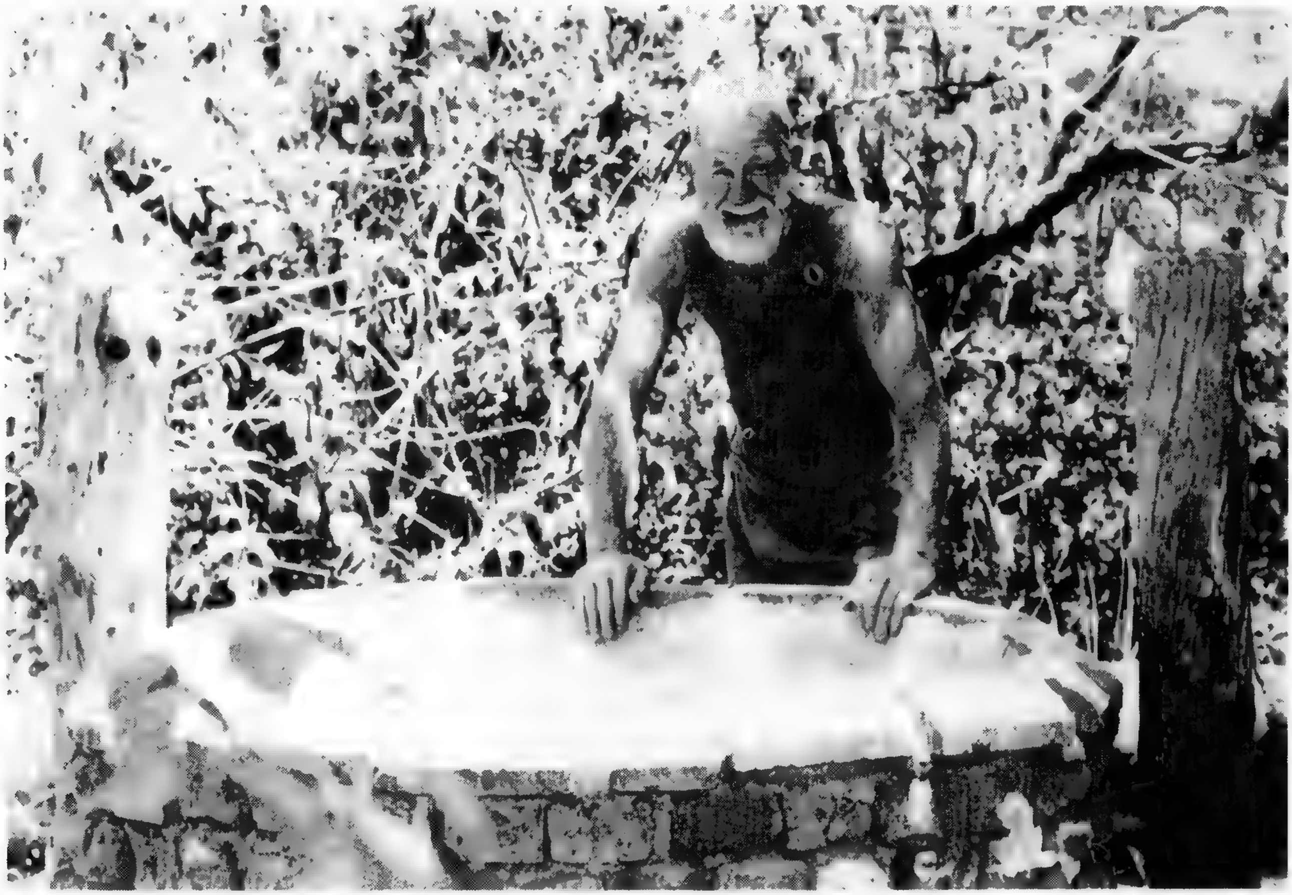
Bruce Andrews is looking for a young man to help in the garden and learn about nature and beautiful plants in return (see **land lines**).

Colin Baker, a former assistant at the gardens takes up the story.

The gardens are completely organic and no artificial sprays or fertilisers have been used since it was a tobacco farm about 25 years ago. Over this period, the sunken rose garden, bulb garden, hibiscus walk — with over 100 hibiscus trees — water garden, wishing well, tropical orchard and two bush houses have evolved.

A nursery has been developed to sell excess plants produced in the garden. These range from indoor and patio plants to large shrubs, flowering and ornamental trees, creepers, palms and some tropical fruits.

At present there are over 30,000 trees, shrubs and other plants with a nursery stock of over 10,000 plants.



Bruce Andrews with his mudbrick wishing well.

Bruce with former garden trainee, Graham Bridge.

Granite Creek has a waterfall and a beautiful swimming hole where we swim every day. The pool is fed by underground springs.

Other sections which will follow this first 4½ acres so far established will be the pioneer garden and museum, a children's playground, a garden for the blind, a walled courtyard garden and an economic garden, in which a wide variety of plants useful to man will be grown.

Many trees and shrubs, such as Umbrella trees, Eugenias, Grevilleas, sunflowers, palms, Justiccas and Sclefferas and natives have been planted to encourage birds into the garden. In this way many insects are kept under control. No cats are allowed to come anywhere near the gardens.

The gardens are vested in a Trust which can never be sub-divided or sold. All nett profit flows into the Trust which exists solely to support the Crippled Children at Townsville.

It's hoped that in the future, the gardens will serve as a training ground for gardeners, nurserymen and landscape gardeners. Today it is a place where anybody can go to tune into nature and break all their tensions.

All this development has been made possible by the work of one man, Bruce Andrews, the present director, with garden trainees. The gardens have developed without any help from Federal, State or local governments

Place

World's End

Mudgee, NSW
By Keith & Kaye Watson

Where do you start? Maybe all my life I have been preparing for self-sufficiency. And so has Kaye — at least since we met nearly 15 years ago.

Nothing that is worthwhile comes easy. Just to be able to look after yourself, to stand on your own feet, takes years of thought, study and practice

Well, we made it to the point of owning our own place up here. It's called *World's End*. We didn't name it, it's been called that for almost a hundred years. The area we now own seems huge to a smallholder like me — 536 acres and two roods (whatever that might be).

We have a converted (or partly converted) two-stand shearing shed as a lounge room, a wattle-and-daub miner's hut for a bedroom and a partly finished kitchen. The best bit is the wattle-and-daub which, of course, is also the oldest.

When we first met Irene and Keith at Marrangaroo a few years ago we had been preparing for a move to self sufficiency for a while. We were working towards a mixed farm, backed by a brood band of first class horses. We had chosen the Appaloosa and had been at it for a few years, following blood lines to breed a stallion and a good group of mares.

Kaye may have seen it coming, but I couldn't. My sights (as usual) were on the far horizon. I had a good truck, a tractor, a chisel plough and a block of land almost paid off in Mudgee. In Lithgow we owned a tiny house on 40 acres of mountain.

Then the bomb dropped. I was riding a horse and he fell, on a bitumen road. I landed in front of a car on my left elbow and knee. The bloke in the car stopped and caught my horse (who wasn't hurt) and they carted me off to hospital, with my left arm ruined.

To cut things short, we sold everything, except the farming gear and the horses, paid off the bank debt, then looked for a place where we could farm without too much heavy labour. We found it only 12 miles from our previous block.

The thing that is now glaringly apparent to me and to a lot of my friends, mainly farmers, potters and artists, is that *we were there!* We had made it and didn't know until the accident forced me to see it clearly.

The area around World's End is mainly rough country. We have three mountains in that 536 acres to give you some indication of that. The house is on a creek that is, to all extents, permanent, though very often it is flowing underground and there are only waterholes left showing.

The garden soil is a rich loam with a clay subsoil and seems in good heart, though there is still a problem with weeds and grasses. When we first arrived there was no toilet, so while I was building one I put two

horses in the garden, then two goats, who were more nuisance than use. After that I took to the garden with the tractor and chisel plough, followed by a rotary hoe.

For seven months now I have fought the good fight against the drought and all manner of weeds and we are getting stuff from the garden — lovely, fresh vegetables — and looking forward to some rain.

Water has been our biggest problem. There is little doubt that this is often the rock on which many people perish. Creeks in mountain country vary between large quantities of water and very little, or none.

Creek beds are deep and sometimes very wide. Permanent pumping stations are not very practical but, I hope for our sake, not impossible, because I want to use a windmill eventually. But it is significant that nobody I know of in the area has a windmill pumping from the creeks.

At the moment I have a pumping station that is working but I feel that it is not going to be practical in the long run. The lift from the creek to the pump is too great and even mounted on the high bank, as it is, I feel that it will be vulnerable to floods.

What we've done is to buy a high pressure 1½ inch light alloy pump with a 5 h.p. motor on it. It is very light, with a carrying handle, and is capable of shifting a lot of water quickly. I still have to increase the water storage area above the house and install a large diameter pipe from the creek.

The reason I am going to such lengths to explain this is that I am sure many people would have struck the same problem. A permanent creek is no use to a gardener or farmer in Australia unless he can get the water out of the creek to a point above the garden or crops. Mountain creeks are subject to flash floods and everything can be washed away.

As far as self-sufficiency is concerned, we live in hope. We started the garden the day after we moved in. I built a pig sty and got two pigs to rear. We sold one and got one baconed. It is hanging in the roof now — smoked, home-fed bacon. This project is rather a test run and I have made some mistakes which must be rectified before the next lot of pigs, but it's still cheap, good bacon.

We have geese, 13 breeders and fowls which were laying the day after we moved in. There are many other projects in view. My work is slow and not as good as I would wish, mainly because of my arm

Nevertheless we have much to be thankful for and a farm of our own At the moment what I miss most is people nearby who are self sufficiency minded. But then, we've been so busy that we haven't taken time to look for them yet!

Well, folks, there is a lot to say: hopes, frustrations, doubts and joys. I could write a chapter on building the toilet or on lining the kitchen I wish you all good living and happy working.

Never let it be said that your mother reared a quitter

— *Keith.*

A few words on the bacon.

We were offered the weaner pigs at too good a price to refuse. It included a swap for a billygoat, and a small amount of cash. We had been thinking of paying someone to take away the goat anyway!

We weren't really ready for pigs. We hurriedly built a sty and bought some feed from the store, though we did pick up some feed fairly cheaply at a local auction sale.

After enquiring at the local abbatoir, where the killing fee was around $14 00, we decided to get it done commercially as scraping the hide is such a big job. A local butcher cures and smokes at 44 cents per kilo.

Next time round we hope to have it set up to do our own curing and smoking, especially as there was a day or two when our pig completely vanished between abbatoir and butcher! After some loud complaints from us it suddenly reappeared. Funny, that!

We decided that the charge for killing was reasonable . By pre-arrangement, the abbatoir will save offal from the carcase too.

Even at such commercial standards of feeding, killing and preparation, we were still able to produce the best bacon and ham we've ever eaten at $1.35 a kilo, or nearly one-quarter of the retail price.

Well worth it. Next year, growing most of our own pigfeed and smoking and curing it ourselves, we might get it to the stage where we *earn* money every time we take a bite.

— *Kaye.*

W.W.O.O.F.

W.W O.O.F. — Working Weekends on Organic Farms — has at last started in Australia, organised by Lionel Pollard. The group is looking for organic growers — anything from ¼ acre garden to a multi-thousand acre grazery — who are prepared to put aside regular weekends (say once a month) to have city people visit and work.

Members are needed too. The fee is $10.00 yearly, which covers organisation of the first two jobs, quarterly newsletter and exchange lists. The first jobs should be available in Victoria.

For more details, send SAE to Lionel Pollard, WWOOF, 7 Duncan Avenue, Boronia, Victoria 3155. Phone (03) 729 3831

seed access

A new interest in saving seeds of edible food plants has been sparked off by the controversy over Plant Variety Rights (PVR). Here is a seed access guide.

SEEDLING SERVICE

Nambour State
Special School

PO Box 486, Nambour, Queensland 4650. Send long SAE for details.

This school for intellectually handicapped pupils of 5 to 17 years of age has a bush house and potting shed where seedlings of useful and edible plants are raised by arrangement.

The school will pot and raise seeds of plants like carob, pigeon peas, cherry guava, basella (Ceylon spinach), Natal plum, strawberry tree, lillypilly, feijoa and native trees. When the plants reach seedling stage they are freighted in tubes at an average cost of 20-25c per tube. There is no charge for the labour.

We do not wish to supply competition to any commercial interests. We merely wish to keep our pupils busy and "under pressure" and since the seed-to-seedling stage is labour-intensive, time comsuming and "fiddling" this is an ideal area to devote our efforts.

Self Reliance Seed Co

PO Box 96, Stanley, Tasmania 7331.

Seed magazine and catalogue, $2.00 per copy. Subscription $10.00.

Self Reliance Seed Co has produced an attractive and informative catalogue of seeds, plus articles on plant varietal rights, regional self sufficiency and a seed saving guide.

A wide variety of seeds of vegetables, annuals, herbs, trees and other useful plants may be ordered by mail at 60 cents per packet. The Vilmorin (and other) engravings of plants give the catalogue a friendly, old-fashioned flavour.

Mulga, blackwood, algaroba bean, black walnut, carob, cashew nut, cherimoya (custart apple), coffee, guava, honey locust, jojoba, Kaffir and Natal plum, macadamia nut, pawpaw, stone pine, Siberian ginseng, strawberry tree and tamarind are among the tree seeds listed.

SAVING SEED

Two good basic stories on saving seed in earlier issues of *Earth Garden* were:

Saving Seed, by Peter Webb, Access 1 (EG22-3) pages 42.45.

The Seed Primer, by Tony Tyrrel, EG11, pages 6-9 (or *Second EG Book*).

Generally, plants with *fleshy fruits*, including tomato, pepper, eggplant and curcubits are harvested ripe, or in some cases over-ripe, the seeds scooped out, soaked and washed in water, cleaned and dried. Whenever possible, seed should be allowed to dry on the plant; this is particularly important with beans, peas, corn, root vegetables and spinach. Some seeds have appendages or coverings which should be removed, eg carrots have spines and tomatoes have hairs.

Help! Save our seeds

Growing and saving vegetable seeds, by Joe Swartz, 32 page booklet, from the author at 19 Rutledge Street, Bungendore, NSW 2621 at $2.00 per copy posted (or $25 for 20 copies).

Joe Swartz believes in "homegrown action" and has produced this handy booklet outlining the dangers of the proposed Plant Variety Rights Bill and giving basic information on how to save your own vegetable seeds.

ACTION GROUPS

Plant Rights Action Committee, Camden Haven Organic Gardening Society, C/- John Skelton, 15 Illaroo Road, Lake Cathie, NSW 2446.

Free Access to Seeds Committee, Food Justice Centre, Friends of the Earth, 366 Smith Street, Collingwood, Victoria 3066.

Seeds Group, Total Environment Centre, 18 Argyle Street, The Rocks, Sydney, NSW 2000.

National Permaculture Association, Tagari, PO Box 96, Stanley, Tasmania 7331.

These groups are leading the fight against restrictive seed legislation. Send long envelope SAE for information and copies of petitions to register your opposition to State and Federal Parliaments.

WHERE THE FARMERS STAND

National Farmer reported in its issue of December 11, 1980, on National Farmpoll VIII which showed that "farmers opposed to PVR in Australia outnumbered supporters by more than two to one".

Of those canvassed, 53% opposed the legislation, 28% were undecided and 19% supported PVR. _National Farmer_ goes to 187,500 farming properties throughout Australia.

STOP PRESS: National Conference on Plant Varietal Rights will be held at the Waite Agricultural Research Institutes, Glen Osmond, South Australia on March 5, 1981. Enrolment fee $10.00. Send sae for information to Eric Williams, W.E.A. Office, 264 Halifax Street, Adelaide, S.A. 5000. There will be speakers for and against legislation.

OUR BEST YEARS

Smythesdale, Victoria
By BILL DYKSTRA

Three years ago we bought our retreat. In our mid thirties, we decided on a 12 acre piece of land at Smythesdale, about 20 kms from Ballarat.

Initially our aims were moderate. We felt that we couldn't do any more than meet our commitments and enjoy the land at weekends and holidays. But given our sense of adventure, capacity to work and that much land to play around with, we were soon geared to the mudbrick, self-sufficiency, Alistair Knox, Ken Kern and herbal lifestyle.

Our property is undulating and cleared of bush, so the one acre stand of spindly eucalypts is highly treasured; so are the wattles and the pine and cypress trees which were the background for a shack long gone. We have called our place Coravaal.

There is an old dam, which we believe was dug by hand, which is full and aesthetically pleasing during the winter and spring, but tends to dry up fast in summer. Consequently we had a deeper dam dug last year to provide water for animals and our orchard.

We bought an old caravan which we made sound and comfortable and which allowed us to store essentials, rather than carry them back and forth. We hauled in many trailer loads of gravel for our access drive.

Next came the fencing. We sectioned off a third of the land, not only to keep the grass down, but for wool. Val is a keen spinner. Lawrence, a brown cross wether, Val's favourite, was the first, followed by two ewes of the same variety. Later additions include an English Leicester wether, grey Corriedale ram and Louise, a little Polwarth orphan. A steer and lamb intended solely for meat have recently added to our stock.

The vegetable garden soon followed. We first planted seed potatoes and were only sparsely rewarded because of the poor soil and adverse conditions, although the tiny spuds were tasty and satisfying. We discovered that we would have to import soil to produce reasonable results.

We were lucky to find a chap with horses who was glad to give us all the manure we wanted. Dozens of trailer loads have been shifted in and more will be required. This source, as well as our local trotting stables, has given us the ability to produce food.

A rabbit-proof fence was needed to surround the entire garden area and we put up a 5 foot high teatree style fence made from dead wood found on the property for protection against the wind and to deter stock and kangaroos from cleaning up our hard-earned tucker.

We have successfully grown cabbages, swede turnips, rhubarb, strawberries, carrots, parsnip, celery, spinach, broccoli, pumpkin, squash, zucchini, spaghetti squash, onions, marrow, potatoes, red and black currants, raspberries, lettuce and a variety of herbs which would delight any gardener.

Those plants which grew well, but were attacked by possums and other creatures, were beans, peas, corn and tomatoes. Cucumbers and cauliflowers have defied our every effort.

Pumps on both dams allow us the necessary water for both garden and orchard during summer. The orchard, now in its third year, is thriving and 15 assorted trees, heavily mulched all year round, should start to bear fruit by the time we have our home built. A variety of introduced trees planted at random over the property have been disappointing, mainly due to drought and frost.

At first we decided that a log cabin would suit our needs for a permanent home, but when we read in our local newspaper that Alistair Knox, the mudbrick house designer, was going to give a talk at a remote place called Yandoit, we decided to attend.

Our first introduction to mudbricks resulted in our being converted — now mudbrick is our middle name! We thought a mudbrick shed would be a good stepping stone to a future earth home.

The old back dam was an ideal place to create mudbricks. When the dam started to recede in the summer of 1977, we started. The clay was perfect, there was water on site and while digging, we were extending the dam's capacity. We made 800 bricks, but as it happened, only 500 were needed for the shed.

My wife has that enduring quality of being able to work with me. It needs aspiration and dedication as anyone will know who has tried making mudbricks in midsummer, mixing only with shovels and tamping into moulds. Mudbricking requires strength, stamina and an almost fanatical dedication of purpose. A like-minded and loving companion is a prerequisite for success.

The foundation work for the shed seemed to take forever, with other pressing jobs, foul weather and illness halting our progress. Once the telegraph poles supporting the roof were in place and the timber work started, progress was rapid and our shed was soon finished. The roof may not be perfectly aligned and the lighting is inadequate, but we think it's beautiful.

Having bricks to spare we decided to add a solar greenhouse to our domain. The southern wall is made of mudbricks while a fibreglass wall, tilted at 60° north, gives most effect from the winter sun. Theoretically 5 x 44 gallon drums, filled with water, ceiling insulation and the mudbrick back wall all help to conserve heat. Fowls also have access through a small hole in the brickwork, use it and also help to heat the greenhouse.

The chickens are enclosed in a large area attached to the greenhouse, with a 7 foot high wall. The seven hens produce more eggs than we need for our family.

I have formulated a house plan, of 27 squares, with a pot belly stove in a circular pit, large living space, interior mudbrick walls, pantry, cellar and solar hot water to be included. We are thinking about a mezzanine floor, solar electricity and clerestory lighting.

Foundation footings and cellar are almost completed. Thirty telegraph poles will be erected to support the roof. I intend to make our own water tanks as we have no mains supply. We have built one tank taking catchment off the shed roof. There is some seepage, but I feel confident that the problem can be solved.

We wondered how we could become self-sufficient, or enough to satisfy our interests and capacity. We tend to agree that total self-sufficiency is a myth. Herbs fascinate us, we have a diverse variety and an outlet for as many as we can prepare for sale, so we are willing to try to create a business with them.

When we bought our land we estimated it would take five to six years to truly establish ourselves. That sounds like a long time, but to us it is a realistic approach. To know your ability and your limitations is critical in seeing through your project. There are many people who fail because they cannot envisage the cost, time, money, energy and even that idealism can stand in the way of the practical.

Our view is that it is necessary to live now, happy and contented. If for some reason you can't fulfill your goal because of illness or family problems, you've still enjoyed the work and grown because of it. A new world of peace and joy won't unfold with a shift from one station to another. You may even find in the long run that you prefer city life.

A milestone has been achieved as our land is now paid for and the title in our hands. It is satisfying to look back and feel that these have been the best years of our lives.

The enjoyment and experience that can be gained from involvement in self-sufficiency and mudbrick building is beyond criticism. We wish the same to all who are willing to follow a similar course. If we can assist anyone, please contact us, we would be happy to hear from you.

Val & Bill Dykstra, 209 Rubicon Street, Sebastopol, Victoria, 3356.

Dear Keith & Irene,

Since *Earth Garden* first came out we have made five major moves, buying and selling land and houses, to find *"our"* spot.

We first tried virgin bush and built our own home in a valley, but the soil was no good, nor was the water and it was too hot.

So we moved to New Zealand and bought a house and land. But Jerry had a heart attack and open heart surgery. The climate was too cold for us — back to Queensland.

This time we bought a big, old house near the sea where we were told nothing would grow. We had a regular "Findhorn" garden on that ¼ acre, with the help of turkey's nest, seaweed, cow dung and horse manure. We both got well there and were ready to take up a bigger piece of land again.

We moved to Gympie, Queensland, and bought 105 acres surrounded by State Forest. We had a beautiful creek and rich soil. We got a draught horse and a Jersey cow and added geese and guinea fowl to our poultry establishment.

But, alas, Jerry is a veterinary surgeon and we were too isolated to make *any* money. The milk cow kept us too close to home to meet people and make friends, but we learned a *lot* that year by just really getting in to it. No more games. We had to produce food for ourselves or starve. I learned to make butter, cream cheese, cottage cheese, ice cream and cheddar cheese.

We think we now have things in proper proportion. We have a little over 10 acres with a good water bore. We are near Jerry's first love, the sea. We have good red volcanic soil. Our livestock consists of five dairy cows of various ages, a few geese, guinea fowls, a peacock, numerous bantams, chooks, one dog, two cats, and a canary.

We have an old but good tractor and a rotary hoe, plus an old *Oliver* bulldozer that came with the land. We are not self-sufficient and probably never will be. But we were both from large American cities originally and have come a long way in learning how to become as self-reliant as possible.

We are now well aware of our limitations and talents and we try to learn as many new skills as we can. We know we do need *some* money coming in; we do need other people with whom to exchange ideas and thoughts; we do need some mechanisation to make up for energy or skills we don't have.

To other *Earth Garden* people we would say: If the going gets too tough, revalue what you are doing and its importance to you. You can and will do those things which you love. And you can do it on a little piece of land or a big one. Don't just dream and wait — start where you are and do what you can to make life more real for yourself.

You don't need a big piece of land. In fact a big slice of land may stop you cold when you get it as there are noxious weeds to cut and paint (no spraying), there are fences to be mended or built (more energy needed) and the more land you have the higher your rates (more money needed).

But don't give up, or despair and think you can't do it, because you can if you want to. It's all a learning process. Learning keeps life interesting and fun.

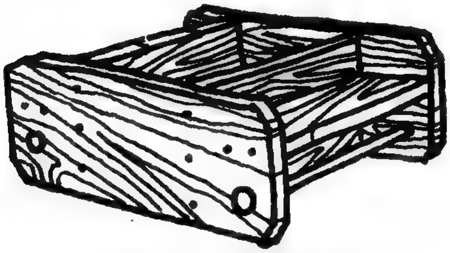
We wish you all energy, peace and love, Harryette & Jerry Cordell, Yeppoon, Queensland.

mudbrick basics

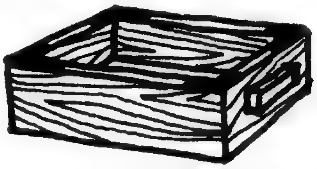
Building in mudbricks (**adobe** in Spanish) is an ancient, world-wide technique, an Australian tradition (especially during the gold rush period) and today a simple, cheap and creative method for the owner-builder.

We have recorded the mudbrick revival in **Earth Garden** since 1972 and know many people happily living in a home which fits into their local environment, particularly in the bush.

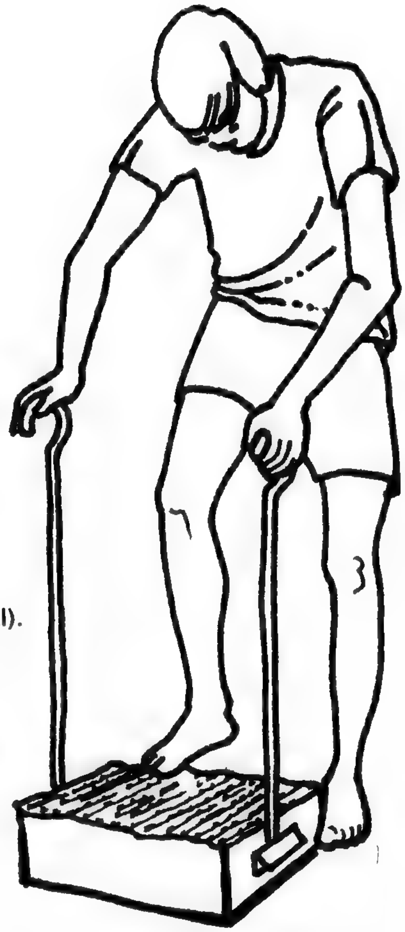
In this issue we outline the basic steps in mudbrick building, then on the following pages follow up with fuller accounts of mudbrick projects (especially the monastery at Stroud) by the builders, to help anyone thinking of using this natural and beautiful material.



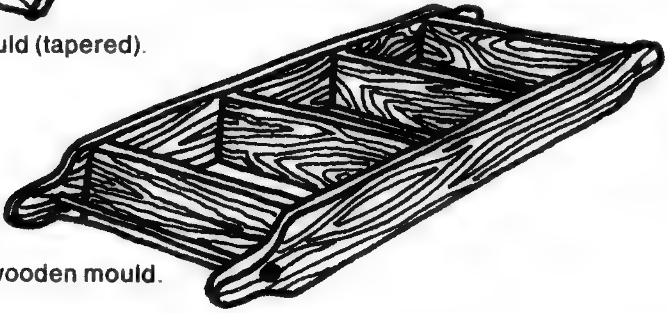
A. single mould (tapered).



B. single brick mould (wood or metal).



C. metal mould with long handles.



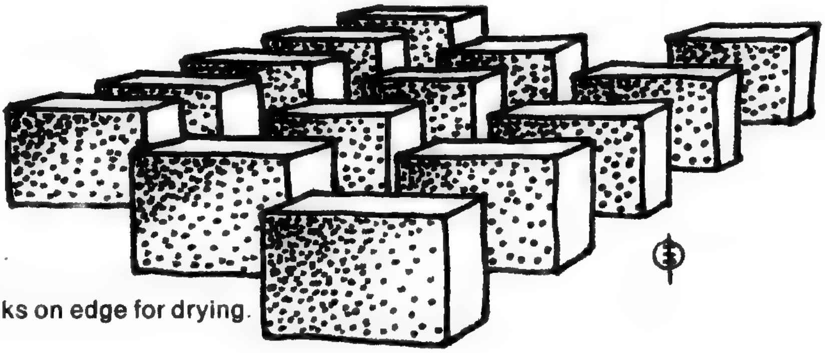
D. three brick wooden mould.

SOIL: Earth, usually taken from the subsoil, is the major material. For mudbricks it should be made up of from 40 to 80 per cent clay, with a sand content of 20 to 60 per cent. This is mixed or puddled to a fairly sloppy, doughy consistency by adding 15 to 30 per cent water. *Experiment.* Straw cut into 6 inch lengths is often added as a binder, but is not essential.

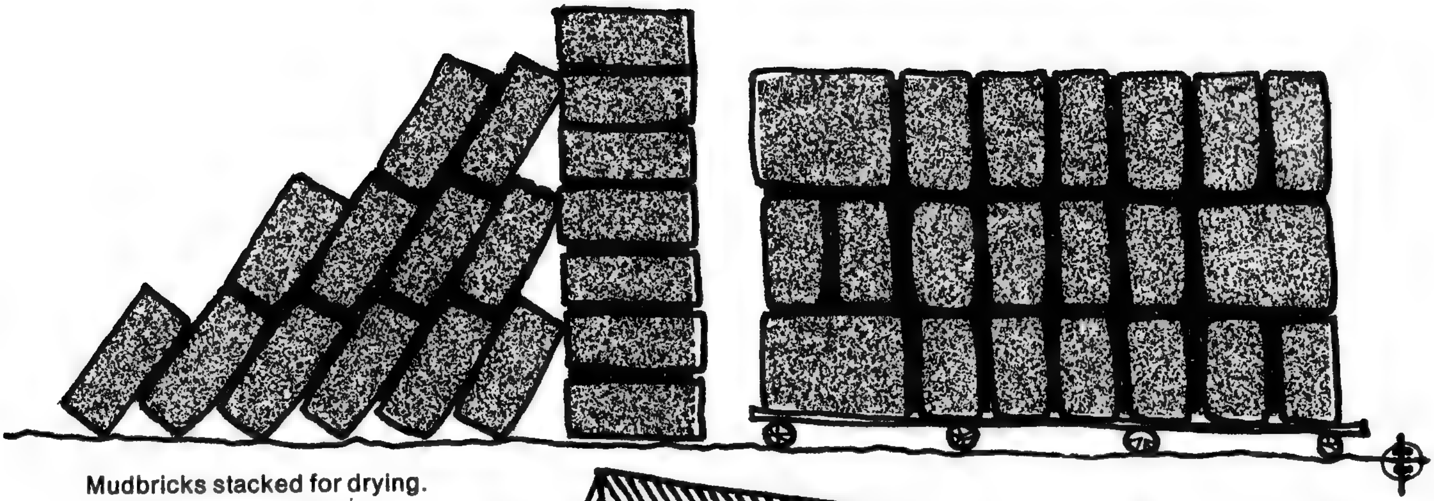
MOULDS: Usually made of wood or sheet steel, open at top or bottom, with inside measurements to suit the size of the brick you require. Moulds may be for single bricks as A, B and C, or for two, three (as D) or more bricks. Two people are needed to lift a three brick mould. The metal mould C has steel bar handles welded to it to help take the backache out of mudbrick making. The moulds may be lined inside with metal so the bricks will slide out easily, or tapered as in mould A — this was described in *Mudbricks revisited,* Earth Garden 7, pages 54-57 — for the same purpose. Every mould should have a lifting handle of some sort.

TECHNIQUE: Wet soil is shovelled into the mould, tamped down at corners (or trodden), then levelled off at the top with a shovel or a piece of flat wood called a *strickle bar.* The mould is lifted off, washed to remove excess mud and placed in position for the next mudbrick. So it goes. A solitary worker may produce 50 mudbricks a day, a team of two or three from 100 to 400 after they develop a working system.

DRYING: The mudbricks are left in position for three days or so in fine weather, then turned on edge to dry, which takes three to four weeks. Then they are stacked at the building site, with space allowed around the bricks for air to circulate. Cover with plastic if it rains (at all three stages).



Mudbricks on edge for drying.



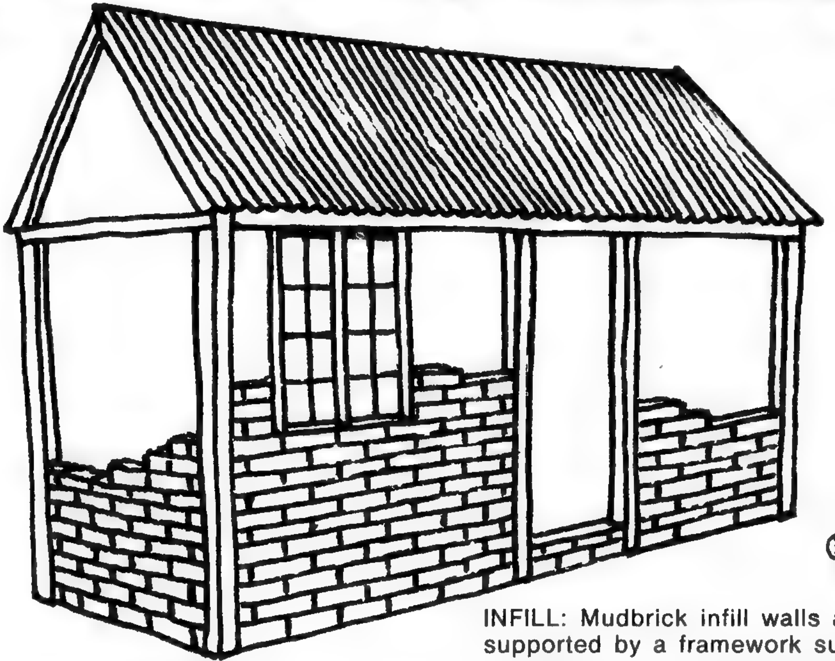
Mudbricks stacked for drying.

FOOTINGS: Footings may be of mudbrick stabilised with lime or with concrete, or of stone and concrete, or of reinforced concrete, or of fired bricks. An ideal footing is two courses of fired brick, then a *damp-course*, which may be of slate, plastic, tar paper or aluminium sheet, then the first course of mudbricks.

MORTAR: The same earth used for mudbricks makes mud mortar. Screen it through an old bed or similar small mesh and remove stones. Make a wetter mix. Mudbricks are laid in a *bonded* pattern, so that the bricks of one course will cover the joins of the course below. Walls are often reinforced by stretching out a strand of barbed wire, bonding it into the mortar every four or five courses.

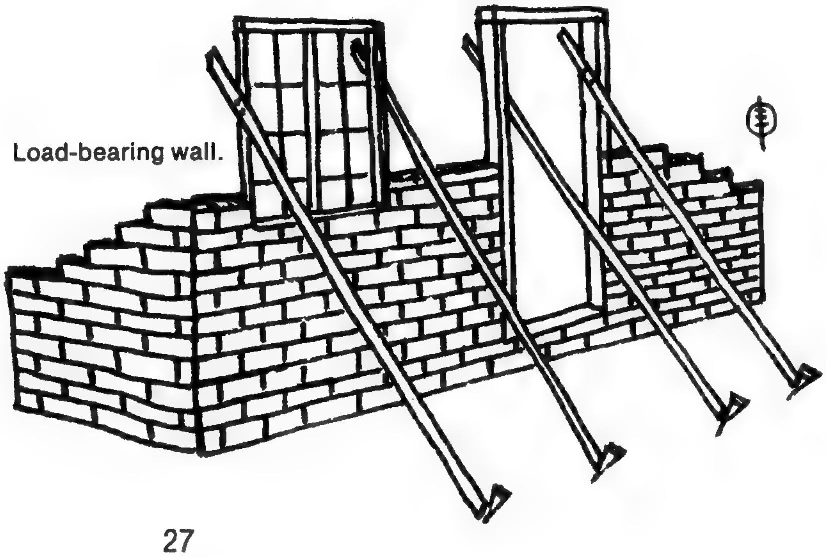
LOAD-BEARING: Mudbrick load-bearing walls are self-supporting and the roof rests on the bricks. Openings, such as doors and windows, are braced into position and the walls built around them. A *top-plate* of timber or steel to support the roof may be tied in — usually this is done by incorporating a metal bolt into the top few courses of the brickwork.

ROOFING: Galvanised iron is preferred by the current generation of owner-builders. It allows overhangs to protect earth walls from the weather, rainwater may be collected and verandahs added. Roofing may also be of slate, tiles, asbestos, wooden shingles, or of turf or sod (see later story).



Mudbrick infill.

INFILL: Mudbrick infill walls are supported by a framework such as telegraph posts, recycled railway sleepers or upright bush poles. This frame supports the roof, so building can go on under shelter. Mudbricks are filled or *nogged in* the frame.



Load-bearing wall.

The mudbrick monastery

Functional and simple, the mudbrick monastery of the Sisters of the Community of St Clare stands on a ridge among the gum trees in the bush near Stroud, north of Newcastle, New South Wales.

This cluster of 17 buildings is a fine example to anyone who wants to build in natural materials, cheaply and quickly, at the same time creating something unique and beautiful.

There are no cloisters or soaring Gothic walls but simply a collection of human-scale buildings made from bush timbers and the earth beneath the bush. Yet there is a special atmosphere in the combination of grey mud walls, green rooftops and the brick paved and timber covered walkways which link the buildings each to each. There is a feeling of the Old World (perhaps Spain or North Africa) evoked by the strong shadows and cool protection from the harsh sunlight.

Within these sound-absorbing walls, the Sisters of this Anglican Franciscan order have the calm and quiet they need to follow a life of religious contemplation, prayer, silence and seclusion, based on the teaching of St Francis of Assisi (1182-1226).

The chapel has an altar resting on round logs, stained glass windows set in mudbricks, a crucifix shaped from bush saplings and a floor of polished rammed earth. In the complex there are square, rectangular and curved buildings, fireplaces, a library, guest house, refectory (dining room), kitchen, storage pantry, craft room, workshop, music room and a community room which overlooks the dams, the garden and the bush.

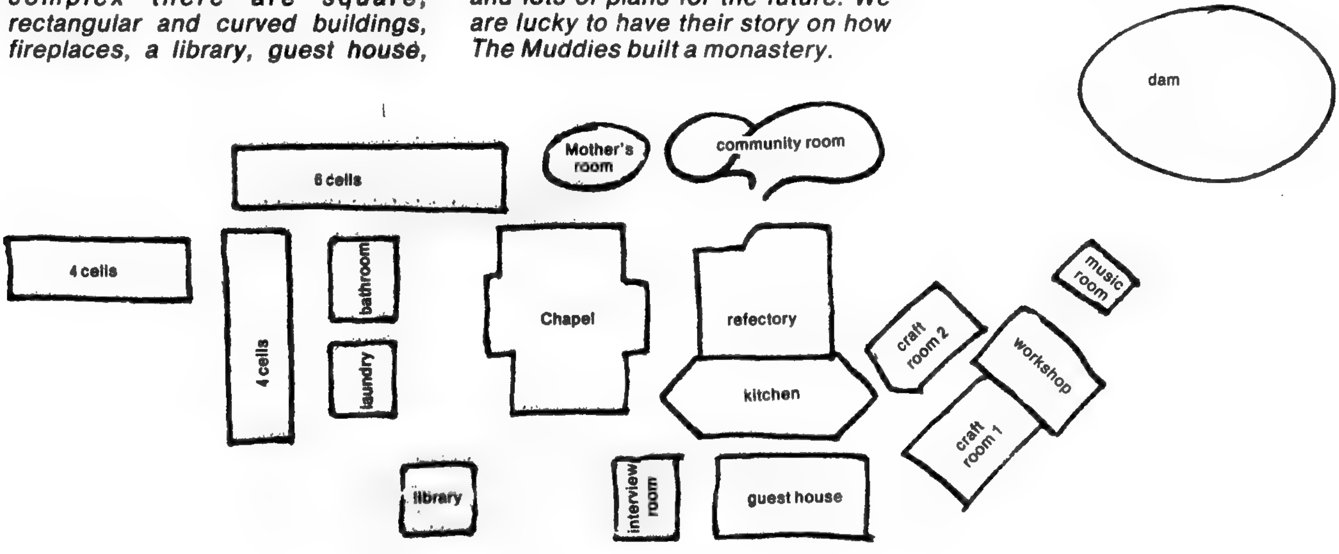
All of this was built within two years by a builder, a trainee builder and friends (The Muddies), by the Sisters and by weekend work parties of volunteer helpers.

But two remarkable people are chiefly responsible. They are Kevin Osmond, the builder, and Sister Angela, who was allocated to work on the site. Without their vision and persistence the ridge at Stroud would still be undisturbed bush.

Sister Angela, cheerful and full of energy, worked full-time, making mudbricks, planning, keeping spirits high and organising the essential equipment and building materials. When the monastery bought a tractor, she learned how to drive and use it.

Kevin Osmond has given two years of his life to the project. He has always wanted to build with earth and jumped at the opportunity to use mudbricks, a decision which made the monastery financially possible.

Kevin is interested in the simple life. He has already built his own home in the bush from slabs and round timbers. He, Pauline and their four children have a big vegetable garden, a goat, a sheep and fowls and lots of plans for the future. We are lucky to have their story on how The Muddies built a monastery.



BY KEVIN & PAULINE OSMOND

Late in 1978 the Sisters of St Clare, a contemplative Franciscan community of Anglican nuns, approached Kevin and asked him to build them a monastery.

Kevin had been interested in the idea of earth building for some time and had been trying to steer away from conventional methods in his job as a builder. When he suggested mudbricks to the Sisters they were immediately interested. After reading Alistair Knox's *Living in the Environment* and some other reference books, all the reasons for building in earth became clear to them.

They realised that using mudbricks would reduce the cost of building. Especially as they could then draw on volunteer helpers. Spiritually, the Sisters could relate well to earth building from the example of St Francis of Assisi, who had said to his followers: *Build simply, with clay and wood.*

Then followed a few months during which the land for the monastery was found and the inevitable 'red tape' problems were met with and finally solved by rezoning the 30 acres from rural to multiple dwellings with the Department of Environment and Planning of New South Wales. We began planning the various buildings and mudbrick making got under way.

Making mudbricks

The building site was cleared and graded and a huge mountain of subsoil was pushed up for making the bricks. We cleared the brick making area, graded it and set up hoses, troughs for washing the wooden moulds and a small shed for shelter and making tea.

There was a remarkable response from voluntary helpers to brick making Saturdays. Most people came from church groups. Others interested included students, scouts, guides, service clubs and the CYSS.

Old and young joined in, working in the hot sun, but loving the brick making and enjoying the community spirit and joy of making something worthwhile and beautiful. The Sisters also made bricks during the week.

At first mud for the bricks was mixed by hand in steel forms, but this method was soon found to be far too slow and taxing because of the large number of bricks needed. At this stage we bought a large tractor with a front end loader.

A system evolved in which mud was mixed during the week by one of the Sisters and pushed by a tractor into large mounds which were covered by plastic (to prevent drying out) ready for the coming weekend's work. This turned out to be a very efficient way to mix the earth, especially as we had the prospect of making 50,000 mudbricks ahead of us.

To mix the mud we first shifted about 10 yards of earth onto the mud mixing site using the front end loader. Then we wet the soil thoroughly by poking several hoses into the pile and sprinkling the surface continually.

When this pile of soil finally became quite wet, the tractor was driven many times through it, backwards and forwards (often with the back wheels spinning madly). Sometimes the tractor became bogged in this massive pile of heavy mud, but we were always able to pull it out, with the help of the powerful front bucket.

While the tractor mixing was going on, one person stood nearby hosing the soil as it slowly turned to mud. About half a bale of cut straw was strewn across the mud and mixed in well. The front end loader then pushed the whole muddy mess into a neat pile which was covered with plastic, weighed down around the edges.

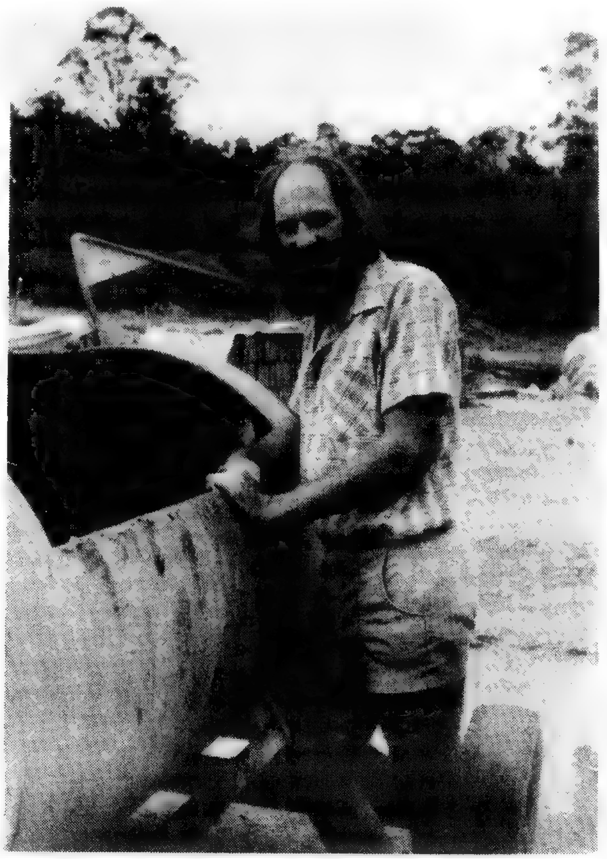
This quantity of mud would yield about 600-700 mudbricks efficiently for our rather large scale of building.

We should point out to anyone thinking of building in mudbrick that it isn't necessary to use a large tractor to mix earth to make enough bricks for the average home!

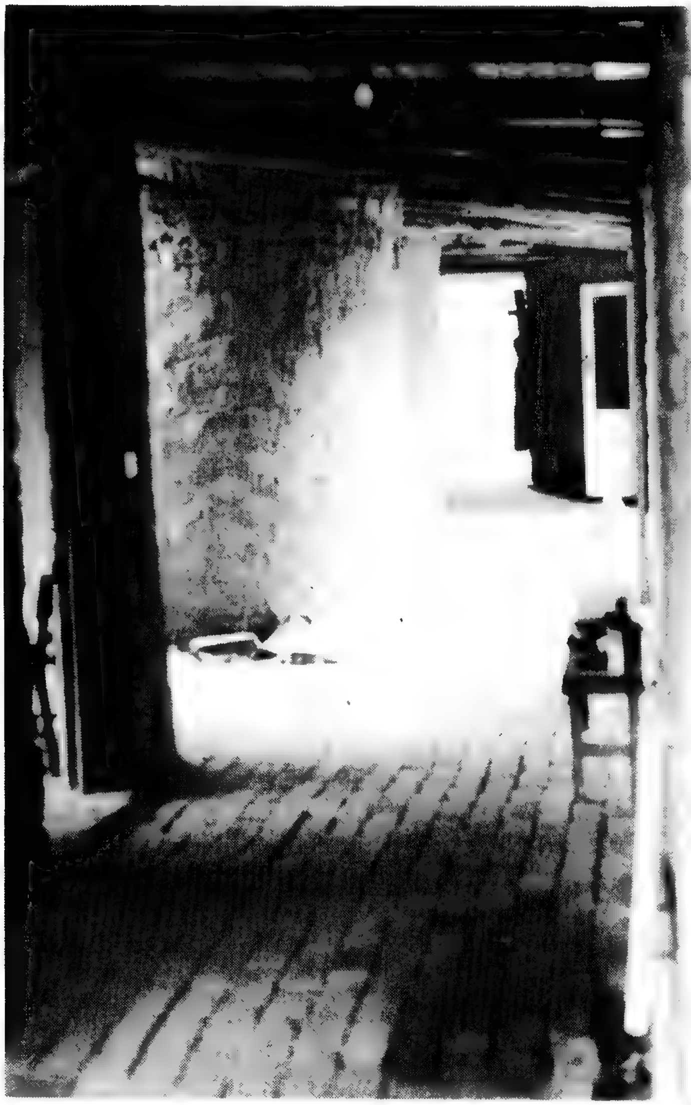
We are mixing mud by shovel in a dug out pit and using our feet as well to make bricks for an addition to our house. The children love to join in mixing mud this way.

Each Saturday at the monastery site work parties of about 25 people would produce any number of bricks, ranging from 600 to 1400 a day. One group turned out 2000 bricks one Saturday — so our stockpile of building material grew rapidly.

Our recipe was simple: dirt, water and armfuls of cut straw were the ingredients. The method was to mix well and push the mud into the wet wooden moulds straight onto the graded ground. The moulds were lifted off straight away.



Builder Kevin Osmond with *Marvin* the mud mortar mixer. The container is a 34-inch steel "mains" water pipe, mounted on a steel frame and wheels. It remains stationary while the "paddles" inside — welded to a 2-inch steel pipe — do the mixing, driven by a 5hp petrol motor, geared down for the job. Water is first sprayed by hose into the container. Then earth is sifted with the front-end loader through an old mesh bed base. This is shovelled into the mixer as the paddles turn (the consistency was arrived at by "trial and error"). When mixed, the cylinder is upended and the mortar falls out of the opening.



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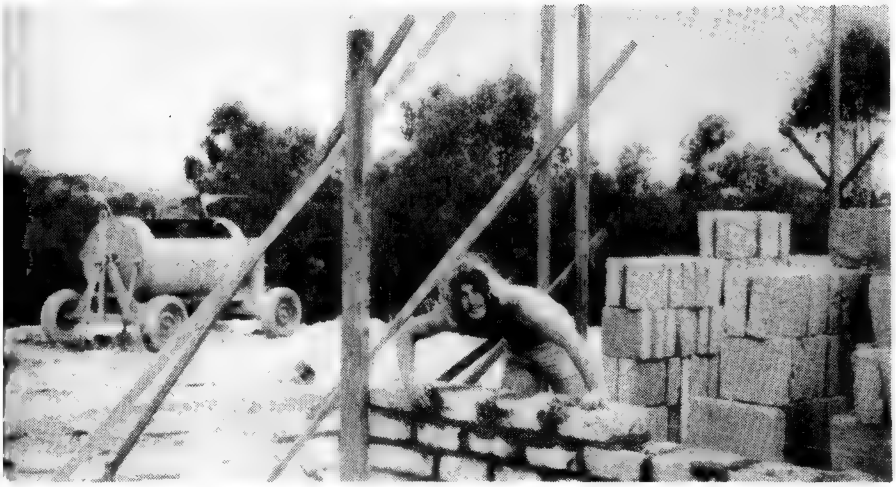
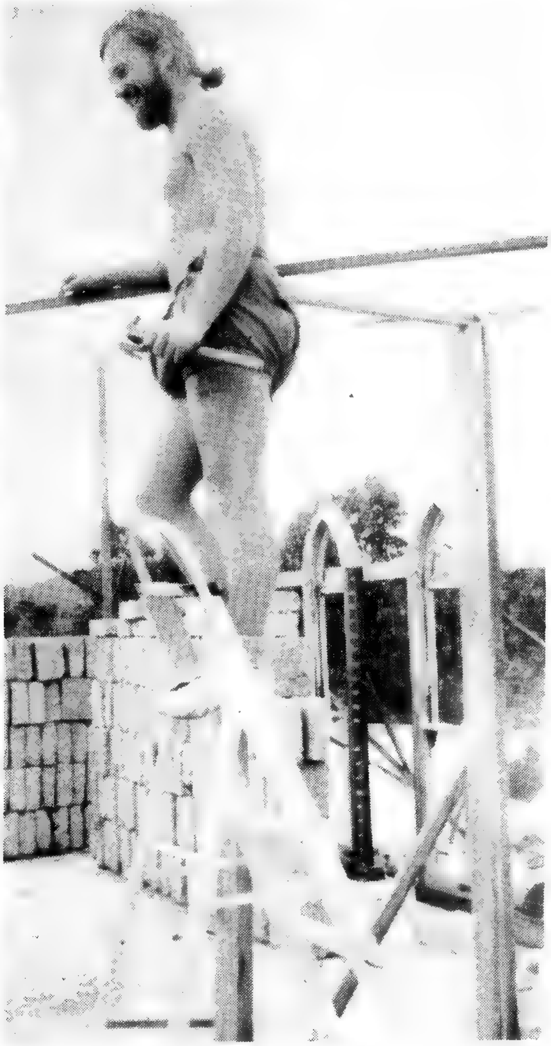




Ve got to the point when we had the sites bulldozed and all the topsoil was ı off. Kevin said: "This gorgeous topsoil — let's try it." It was perfect — 40 ent clay — absolutely perfect. The bricks didn't shrink. They hardly cracked, ut a bit of straw with it. There we were.

o now what we'd discovered is you take the grass off the top. You take t 6 or 9 inches off the topsoil and you clear your area of that amount of soil hat is enough to make your bricks for that area.

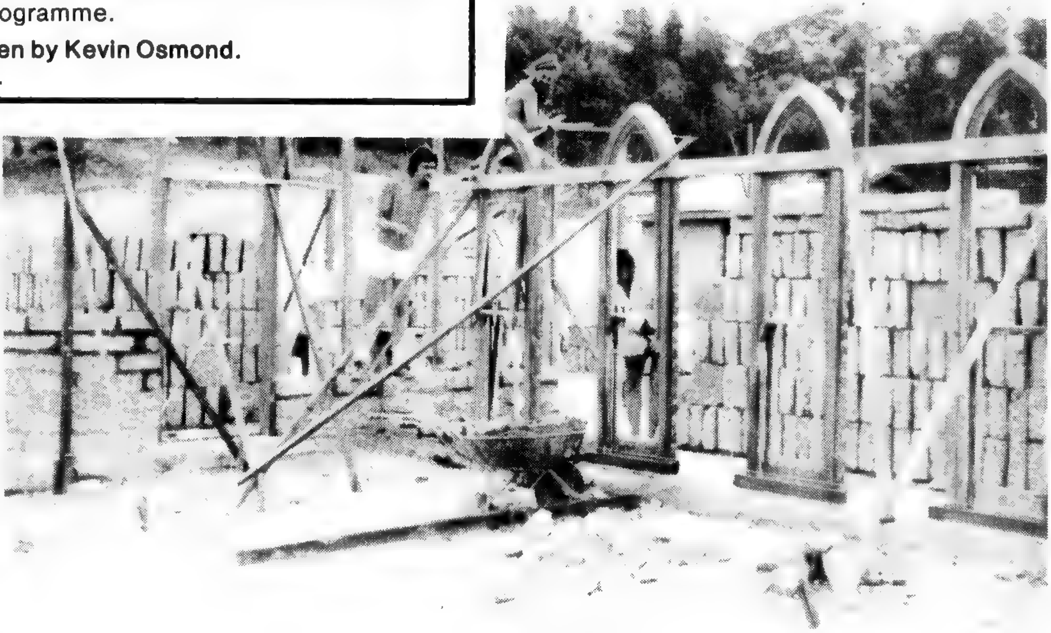
/e had three moulds in a form — four was too heavy to lift. So you get a -mould, then you just slop your mud in. You stamp it with your hands, th it over the top, lift your mould off — as quickly as that. Wash your mould, down, fill it with mud and so on. It's very quick.

Ve got second-hand railway sleepers. So you get a door and you knew your of door, so you put your sleepers up for your door surrounds and sleepers s the top. And with second-hand windows with glass, we did the same. you simply build your bricks around whatever your frame.

eople came, saw and got caught up in this thing, of actually building her — building with the earth. Now this is something, you see. It's living the earth, all the things that grow out of it. Now to actually build with it, it's he most fantastic thing. It does something to you, to get your hands slopping d in mud like a kid — and your feet. And then, there's your brick that you've lly made. It's creative.

ISTER ANGELA of The Community of St Clare, Stroud, in an interview with yn Jones of ABC Radio *City Extra* programme.

Most photos were taken by Kevin Osmond.
Extra photos by Keith.



The majority of bricks used are 12ins x 12ins x 4ins and a corner brick of 12ins x 18ins x 4ins. Originally we made bricks of 10ins x 15ins x 5ins, which seems to be the standard size of mudbricks in Victoria. We found that this proved to be a heavy and awkward size, especially for the Sisters and the women helpers who were handling the bricks.

The 12ins x 12ins x 4ins brick gives us a 12 inch thick wall, with consequently improved thermal qualities and greater stability for load bearing walls. A square brick gives four faces to choose from and, by incorporating the corner blocks, gives a 'true bond' and eliminates the need to cut the bricks. The 4 inch thinner brick also has the advantage of drying faster, especially in cooler weather.

The only disadvantage we can think of is having to lay more bricks in a wall, plus the fact that the final appearance is not as 'chunky' looking as the larger brick.

After a couple of days drying the bricks were turned up on edge. After a week they were stacked. The brick making site was then raked over ready for the next work session.

The Sisters were helped by Irene, a voluntary worker, who gave up her time to look after the mudbricks. Irene was responsible for turning the finished bricks on edge and covering them if it looked like raining. This was a full time job, with up to 2000 bricks drying at once.

Designing and planning

Our first building was a self-contained home for the Franciscan Brothers, some distance from the proposed complex for the Sisters. This was designed by an architect and seemed at the time to be practical, functional and attractive, but during the construction its style — load-bearing timbers with mudbrick infill — began to seem too rigid a method for working with mudbricks.

Designs for the later buildings in the monastery were much freer. Ideas flowed from the Sisters. By this stage a group of paid workers had formed which became known as *The Muddies,* a name which came up one day when we began singing together "Oh yes, we're The Muddies".

One of the Muddies, Chris Nash, had studied some architecture and his experiences proved valuable. So, as we learned, the Sisters, Kevin, Chris and the others all contributed to the design. Chris then drew up working drawings for the 17 buildings — linked by brick-paved walkways — and submitted them to Council on the understanding that plans could be amended as the job progressed.

Our plans were passed without any problems. There may possibly have been some scepticism at first from the Building Inspector, who asked for the normal compression testing of bricks. This was done at the University of Newcastle, the result being mudbricks with a compression strength of 320lb per square inch.

The Building Inspector paid a few visits early in the job. Kevin showed him around and pointed out the advantages of building in mudbrick, for example the insulation properties, fire resistance, dry, sound proofing, aesthetic approach and so on. He didn't seem too impressed by Kevin's enthusiasm.

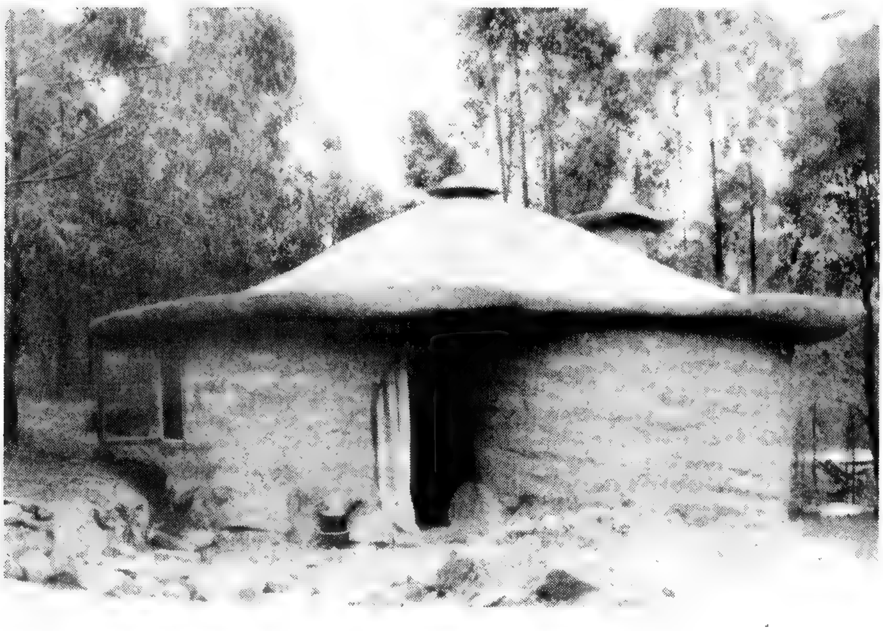
Months later, however, the Building Inspector returned to the site with two other Building Inspectors from neighbouring Councils.

Kevin was working out of their line of vision and was amused to overhear our Building Inspector repeating all the points he had made about mudbricks on the earlier inspection.

Building

We started by setting out for the 17 buildings, digging foundations and pouring concrete footings. We carted the bricks to each building site in the tractor bucket and an old four wheel drive utility.

The *load bearing* walls were then laid up with the mudbricks and mortar made from sifted soil in a mixer Kevin devised and had made by a local engineering firm. We called the mixing machine *Marvin* and he worked very hard, producing



VISITORS' RETREAT

This little building, shaped like a clover leaf, nestles into the side of a hill overlooking the monastery and is used by visitors who desire a retreat.

Chris Nash designed and built the cave-like structure, which is certainly the most artistic of all the buildings as it resembles a gnome's home from a fairy tale.

Large rocks make up the foundation, with mudbricks laid on top, following the uneven shape of the rocks. Curved tree trunks form the doorways and windows.

The walls are six feet high. The roof is ferro-cement, totally free-form, resembling a hat with edges curved to form a gutter.

The chimney and a central air vent protrude through the roof, each with its own little hat. The floor is smooth river stone laid into a cement mortar and timber blocks laid the same way.

about 9 tonnes of mortar a day.

All the windows and doors were second hand, some acquired from an old church which we demolished. These were built in as we went, with railway sleepers being used for window and door frames and heads.

The roof timbers were ironbark round timber, cut locally. For the roof lining we used second grade tongue-and-groove hardwood floor boards, nailed directly onto the rafters, then battens nailed onto this.

Insulation was then placed on top and Colour Bond corrugated iron was screwed on.

Floors

Earth floors were used in the *cells* (bedrooms), the library and chapel, using two separate methods.

In the first, dirt was sifted, then mixed with water and bitumen emulsion (1 litre to 2 cu ft of earth) and then spread out to a thickness of 3 inches over a membrane of plastic sandwiched in sand.

We applied a steel float finish and the floor was then left to dry for three weeks. As the mixture dried, cracks appeared in a crazed pattern and were then filled with mud.

The second method was used for the chapel floor, which was quite a large area. On top of a plastic membrane, 6 inches of sifted soil mixed with 8 per cent of lime, was raked into position. This was smoothed off, then compacted with a small vibrating roller, until the surface was extremely hard. We had some problems with the floor not compacting evenly and decided to patch these areas with Cinva Ram tiles.

The finish used for the earth floors was commercial sealer and several coats of Johnsons liquid wax. The end result was an attractive, durable floor.

In other areas of the monastery, such as the kitchen, bathrooms and refectory, floors were quarry tiles over concrete slabs.

Wattle-and-daub

We experimented with the traditional wattle-and-daub method in building two of the internal walls of the chapel.

Dried 4 ins x 2 ins timbers were spaced at 3 foot intervals along the proposed wall. These were fixed vertically between the ceiling and a small brick foundation. The 4 inch width was the thickness of the wall.

We ran a chainsaw cut, ½ inch deep, down the centre of the timbers. Batons of ⅜th inch x ¾

Outside the chapel. The windows at ground level provide ventilation. The timber pole framework will be covered with wire mesh to support fast-growing plants, such as ornamental grape vines, to form a shadehouse, which will further cool the air moving through the chapel windows.

Inside the chapel, a simple altar is mounted on bush logs. Windows at ground level allow a flow of cool air. Floor is of rammed earth.

inch hardwood were jammed horizontally into the sawcuts between the timbers.

The next process was to weave batons of ¼ inch x ½ inch to form a framework ready for the mud. Mud was mixed on the ground outside, with quite a large amount of cut-up straw being added — probably three times as much as in our usual mudbrick mixture.

This mud and straw mix was then forced through the lattice work on both sides, usually with one person working on each side. We found that we could only progress up the wall about 3 feet at a time because the weight of the mud would distort the wall if we tried to fill in more than this.

The mud was rubbed smooth with the palms of our hands as we went. When the wall was completely dry, the timber work was cleaned and oiled. The end result was a very attractive wall, with a Tudor-like appearance because of the timber divisions. The large amount of straw used gives it an interesting texture.

However, we decided against doing any more wattle-and-daub walls because the labour content was much greater than for mudbricks, even taking into account the actual work of making the bricks.

For internal walls in a couple of the buildings, where non load-bearing walls were appropriate, we found that laying the 15 ins x 10 ins x 5 ins bricks on the 5 inch edge built very fast and sound walls, providing the length of the wall did not exceed 8 feet. In most cases we got around this by building in a 2 foot 'nib-wall', which served as a wardrobe-end when we were finishing off inside.

'Wet' areas

In our first building, the Brothers' Hermitage, we used mudbricks for the bathroom, shower and toilet. These walls were rendered by nailing two layers of bird-wire with 4 inch nails onto the mudbricks. A render of rich sand and cement was applied to a depth of ¼ inch. When dry, the wall was finished with three coats of acrylic paint.

Once again this method was labour-intensive. We realised that when it came to building the ablutions block for the Sisters we would have to think of something more practical as four shower rooms and two bathrooms were needed.

So we adopted a more conventional approach. The two end walls were of mudbrick and we built the toilets to these walls. The two longer side walls were built of stud framing and clad on the outside with 10 inch timber slabs. The dividing shower walls were sheeted and tiled.

Walkways

The final design concept for the monastery was to have a cluster of buildings all linked by walkways. In many cases this was done simply by extending the roofline an extra 6 to 7 feet. In other cases, where two long buildings were involved, a 5 foot wide walkway was created by placing round timber beams at 4 foot intervals between one building. The ceiling boards were nailed on and continual lengths of *Kliplock* fixed on, which also served as guttering.

Some of the walkways have been glassed in, creating sun-traps and giving wind protection.

Curved walls

Several of the monastery buildings have free-form designs. Concrete slabs were poured into the desired shapes of the building and mudbrick walls laid to follow the shape around the perimeter. One building was shaped like a tear-drop, another like an egg and the community room was kidney-shaped.

You can't use string lines to build curved walls, but a 4 foot spirit level was used to keep the walls plumb and level. You use eye and judgement. An axe is handy, because on tight curves you may need to chop off the corners of the bricks as you wedge them in a circle. On a looser curve, you butt the bricks into shape and make up the spaces with extra mortar. Once again, practice makes perfect.

The fireplace in the community room is the shape of a huge 'blister', to blend with the curved walls.

When the walls are rendered, the result is a lovely flowing feeling of gently curving earth-coloured shapes.

Sod roof

Two of the smaller buildings with scillion-type roofs have sod roofs. The only structural difference between these and the normal tin roof is that the rafters are placed at a much closer interval (1 foot centres).

The ceiling boards were nailed on, then hardboard was nailed on top of them to obtain a smooth surface. This was covered with heavy duty plastic, which was taken up one side of a 10-inch fascia board.

Along the lowest edge, a row of large rocks was placed on top of a strip of aluminium flashing to protect the plastic. The whole area was then filled in with 8 inches of soil and planted with herbs, flowers and grass.

Heating

Three fireplaces were built in different areas — the chapel, community room and guest house. Two were made of mudbrick and one of rough stone. The mudbrick fireplaces were a joy to build because they can be sculptured to any shape desired. They have also proved themselves to be an efficient method of heating.

A combustion stove does the cooking in the kitchen and also supplies hot water for the kitchen and guest house. A solar hot water system was installed for the bathroom area.

Finishing

The Sisters themselves took care of rendering the walls. Walls were wetted, then rubbed with a bag to obtain a nice flowing finish and to fill in any gaps and crevices in the wall. When the walls were completely dry, they were sprayed with *Bondcrete* (diluted one part to 4 parts water) to seal the walls and prevent dusting. All timber work was painted with linseed oil.

The Sisters moved into the first stage as soon as they could in January 1980 and the buildings went up around them. As each building was completed the Sisters would move in.

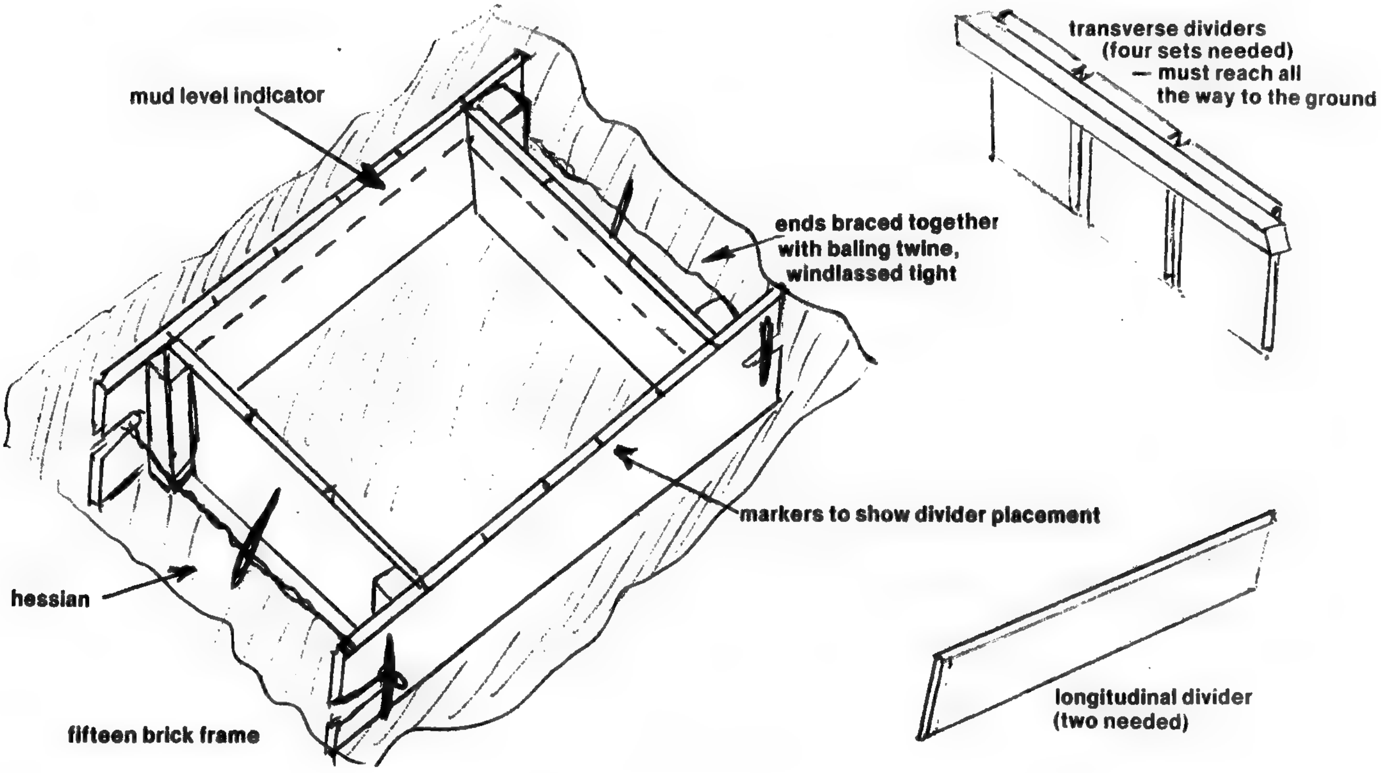
The covered walkways were brick paved and turfing laid between buildings and courtyards helped bring the place together. On July 12, 1980 about 2000 visitors were present on Dedication Day.

Many sightseers visited the job while we were building. Now the Sisters are able to go about their life of prayer and enclosure so, from now on, *no sightseers are permitted.*

If you would like some further information, you are welcome to write to Pauline and Kevin Osmond, PO Box 16, Stroud, NSW, 2425.

Finally, we would like to thank all *The Muddies* (too many to name) who helped make this project possible.

Bob's bonza brickmaker



By BOB RICH

Mudbricks are an excellent building material if you have suitable clayey soil on your site. They can be made in advance while you draw up your plans, by unskilled people and occasional helpers, or as one task among many.

Laying mudbricks is faster and easier than with conventional 'fired' bricks.

If you take a few simple precautions, your house will be dry, comfortable and at least as durable as any solid brick house. And earth walls are ideal for buildings which use the 'low energy' or passive solar' approach to space heating.

Of course mudbrick making has unattractive features too. One of these is that it is really hard work. One excellent book on mudbrick making ends with the benediction: "Happy backache!"

The author is right too, at least for the method used for the past 5,000 years. But now all that has changed: I have invented a method that cuts down the time — and effort — to about one-third or one quarter of that usually needed.

The how and why of this method will be easier to understand if I first describe the *traditional* method for making mudbricks. This consists of two stages. First, clayey soil is *puddled,* that is thoroughly mixed with about its own weight of water. Secondly, the resulting mud is shovelled into appropriately-sized moulds, which are pulled off, leaving bricks which must then dry.

Puddling a decent quantity of mud is extremely hard work. The end product has to be a smooth paste about the consistency of bread dough, or porridge. Each particle of soil must be surrounded by a thin film of water, but if there is more water than necessary for this the bricks will slump and you will end up with something like rectangular cow-pats.

Of course, when the mud is smooth and uniform and up to the right consistency, you still have the labour of making the bricks. You have to carry heavy shovelsful of mud and continually bend and straighten your back, even if the mould has long handles. The mould also has to be washed out before each brick and the mud must be thoroughly packed into the corners of the mould — failure to do this properly is a frequent cause of poor quality bricks.

My wife Jolanda and I have been making mudbricks under a variety of circumstances. In the course of this we have tried out various ways of making the job easier.

On one occasion I first made the mixture extremely sloppy, so that it was easy to mix and homogenise. Then, when all the lumps were gone, I proceeded to mix in more soil until the mud was thick enough.

This turned out to be a minor disaster: the last part was as much work as mixing a whole batch! Each shovelful of dry soil was harder to work in than the one before it. Nevertheless, this was a useful exercise, because it led to *the* method.

The only reason that I couldn't leave the mud sloppy was because I wanted it to stand up under its own weight when the mould was removed. But suppose I left the mould on for a few hours, or even a day or two . . . ?

So, after some more-or-less systematic experimentation I have arrived at *Bob's Bonza Brickmaker.* We roughly level a suitable bit of ground and set up on it a rigidly-braced wooden frame. This is about two inches higher than the bricks (with an indicator to mark correct brick height) and its length and width are carefully calculated (don't ask silly questions — read on!).

The mud is puddled within this frame. Any leaks at corners or bottoms are of course plugged with mud. The mix is made *very* sloppy — I can't get experienced mudbrick makers to make it sloppy enough. It has to be like thick Continental pea soup rather than like bread dough. Because of this the puddling is quick and doesn't take a great deal of effort. It really amounts to locating and squashing the lumps.

When the frame is filled up to the level indicator we divide the mud into strips with wooden dividers and the strips into bricks with smaller wooden dividers nailed onto a scrap piece of timber. And that's it. No shovelling of wet mud into moulds or any of that nonsense.

In order to discourage the ground underneath the bricks-to-be from being mixed in and to soak out the water, we put down a layer of thick hessian under the frame and hanging out all around before we start (yes, it is hard to get it in *later!*).

Since we have put up the roof of our house first, so that the mudbrick making area is out of the weather, we find that even on a cold, wet, miserable day we can remove the frame and dividers within about 12 hours.

At that stage the bricks are about the same consistency as traditionally made mudbricks straight out of the mould. When they have dried they tend to be more dense, have little or no cracking, even with our rather inferior soil and, best of all, never fall to bits as a result of unfilled corners.

We make frames from scrap bits of wood, dividers from old 6 in x 1 in floorboards. Jolanda likes to make 15 bricks at a time in a frame with inside measurements of three brick lengths, plus two inches wide and five brick widths, plus four inches long.

I prefer to make a 30 brick batch in a frame which is the same width, but twice as long.

The mudbrick-making frames and the wooden dividers need to be painted with sump oil before use and every now and then after that — say after a month of continuous use. Otherwise the mud sticks to the wood and bricks are pulled apart when the bits of wood are removed. The risk of this happening is also reduced by dipping the dividers into water before inserting them into the mud.

There is no need to put straw into our mudbricks. Straw actually weakens the cured brick. It is useful when the drying process sets up stresses within the brick — these stresses are distributed by the straw.

Dr Bob Rich 'retired' from his job as a research assistant with the CSIRO Division of Building Research a couple of years ago when he was aged 35. He and his wife Jolanda and children Natalie (12), Robert (10) and Anina (3) are enthusiastic members of the Moora Moora Co-operative near Healesville, Victoria.

They are building up Cluster 3, which they have named Wombat Hollow. They are keen to meet people who want to join their Cluster and Moora Moora.

On the other hand, when the mixture is finished, I often stir into it crushed-up broken glass, bent rusty nails and small stones. This is an excellent form of waste disposal and my theory is that it strengthens the brick in the way aggregate does for concrete.

Naturally, this is not appropriate for bricks which need to be cut or shaped later on.

The other day, the Moora Moora kindergarten came to make mudbricks with us. Seven kiddies, ranging in age from 2½ to 5 years old, teacher Roswitha, plus Jolanda and myself, made 45 bricks in an hour.

I did most of the shovelling, assisted by a five-year-old. Jolanda and Roswitha trampled mud with the children, but seemed to spend as much time holding their hands.

It was fun and educational. But needless to say, kids of this age would be physically incapable of making a significant contribution towards puddling normal consistency mudbrick mud nor to actual mudbrick making.

There is a lot more I could write about our method and about mudbrick making in general — but I'd need to write a book. Personal contact is better. We live at Moora Moora — P.O. Box 214, Healesville, Victoria 3777 — and anyone interested is welcome to come and make a batch of mudbricks with us.

Most of this story was written in hospital and I am now regaining strength while Jolanda is getting over concussion. Through a conglomeration of bad luck we have lost a couple of months of building time. The house is going up fast, but we are happy to swap information for work.

MUDBRICK TIP

By Peter Kurz

So many people try making mudbricks and, I feel, are too timid. For example they use a very dry mix as they are afraid of the mud being too wet. If the mix can be *forked* and will *just* stay on the fork it is not too wet.

Too wet shows when the bricks collapse after you remove the mould. So use a fork rather than a shovel. It is easier to handle and certainly lighter, as the mud does not stick in the fork tines as it does on the broad shovel blade.

mud barbecue

By Peter Kurz

Barbecues always seem to be so prosaic. wanted to do some sculpture with mud and being "practical" wanted to combine the sculpture with something "useful". So I tried a mudbrick BBQ.

It works and has given a lot of not too badly charred meat and fun.

For the barbecue plate I used a discarded extrusion plate from the brickworks. These are very heavy duty cast iron plates with lots of little holes drilled to allow clay to be pressed through for commercial brick making.

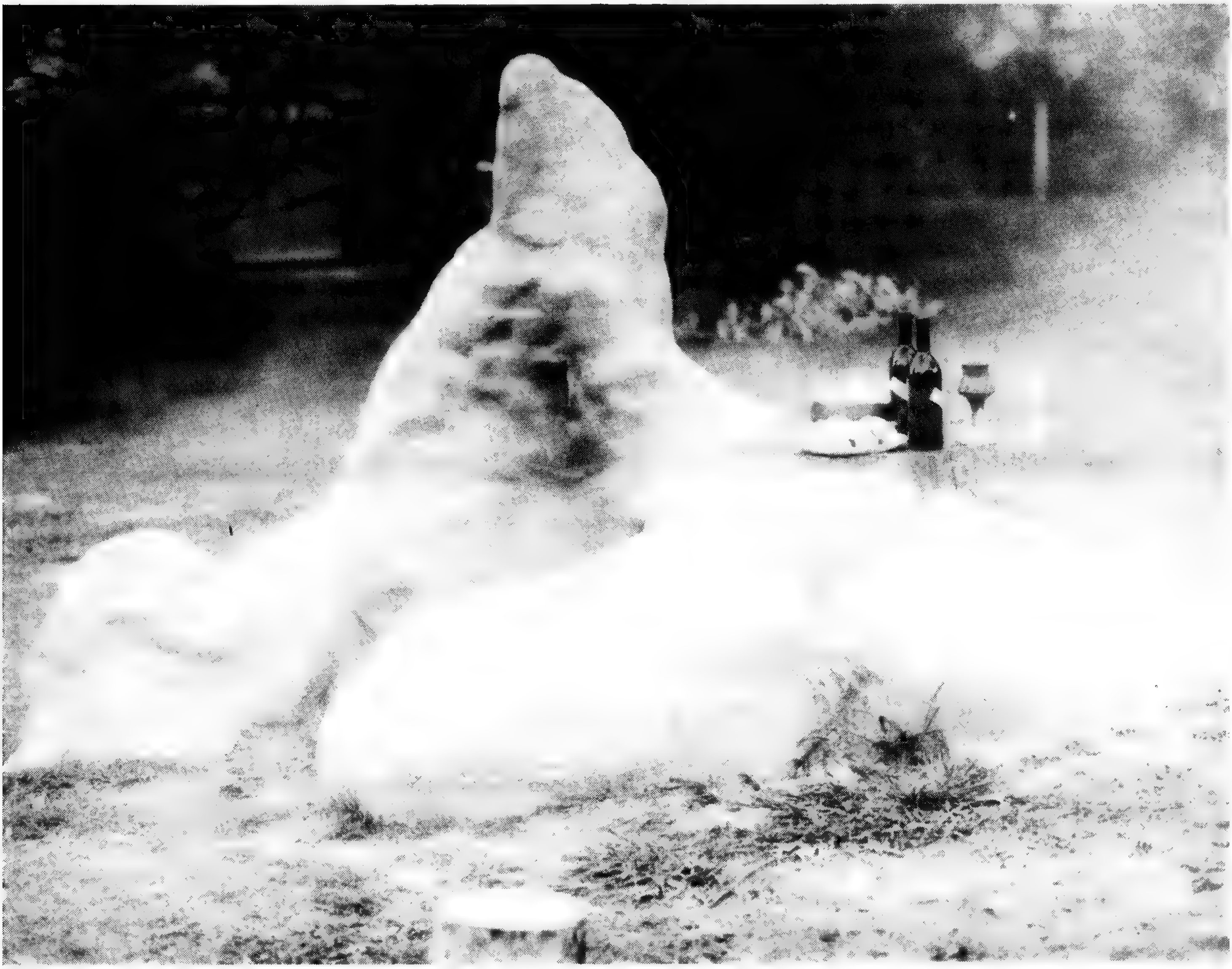
The clay is available just about everywhere — again free.

When the structure has risen high enough to start slumping, stop for a week or two and build up gradually. There should be no indentations or level areas that would collect water or stop it from running off easily, so all your "bumps" for seats or inbuilt tables should run off slightly.

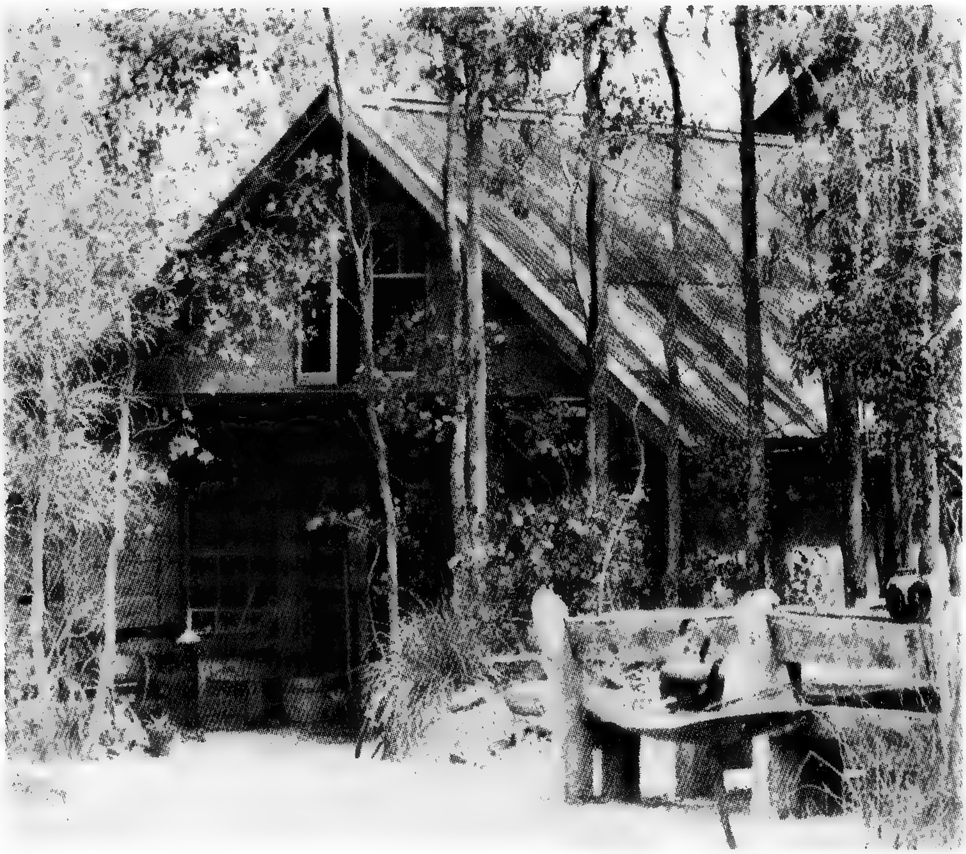
Let it dry out thoroughly. Fill all the cracks up with more clay, smooth the structure down (if that's the effect you want) by wetting your work of art and rubbing it with your hands until it shines.

When all the cracks are dry and if necessary have been filled a second or third time, give your handiwork two coats of silicone-based water repellant, or bondcrete, and it will stand up to the rain.

For some time anyway . . .



A tight house



Earth Garden readers should recognise the beautiful home of artists Neil Douglas and Abbie Heathcote at Kangaroo Ground, Victoria. It is the house which first got us interested in earth building. Abbie supervised the building (see EG 3 & EG 21) and has since added a gallery, a glass-roofed conservatory and bathroom with hand-painted tiles. A greenhouse is now being built.

BY ABBIE HEATHCOTE

When we built the house, we didn't really build a *tight* house at all. That's fairly important.

You've got to have ventilation, but in this house the roof was like a collander. It's a bit of a waste if you've got a marvellous mudbrick house and a roof like a sieve!

So we took off the outside roof and we've lined it with sarking and we've stuffed seagrass in as insulation. I'm glad now that I didn't insulate years ago because then I would have probably used rockwool or something like that. Eelgrass is natural.

It seems funny that all these people are building mudbrick houses with lovely, natural, earthy materials and qualities and then they put fibreglass in the roof, or they use a plastic sealer with the rendering. They don't seem to realise the contradiction there.

We built our house slowly. Now, if you're employing unskilled labour (which I did) and you're an unskilled foreman (which I was), you can only keep one or two workers active all the time. You've got to be very well organised and have all your materials ready ahead of the work. If you've got more than two labourers, you're paying people wages and they're standing around, waiting for somebody to do something, or for something to happen so that they can do their job.

I'd say one labourer and yourself is probably enough. The work really goes along well, it's amazing how quickly everything happens. If you're alone and you've got to stop and cook a meal or pick your kid up from school and all the other interruptions, it's amazing how *slowly* the work progresses.

Even with a 30-hour-a-week labourer we'd built the basic core of the house within three months. The foundations had been done. If you are building your own house, employing labour, you've got to be there. If you can't, you might as well get a proper builder and pay through the nose. You can't expect unskilled, paid-by-the-hour labour to work very well if you're not around.

This whole property, which on the real estate market is probably worth something like $100,000 now, cost us what we would have paid in rent if we'd lived in an ordinary house, somewhere down in Eltham, for 10 years. We came up here and lived in a tent on the site. You're not allowed to do that nowadays, but you can live in a caravan for three months to two years, depending on your Council.

I think building regulations may have to change a bit because of the shortage of fuel. They will have to allow lower ceilings and things like that because you use less materials and it takes less energy to heat, and provided it's well ventilated, there's no danger. I think ceilings are often unnecessarily high.

The original idea of the bulding regulations was to protect people from unscrupulous builders, not to protect them from themselves. Now it seems to be to force you to pay to get some builder to put up your house and for you to pay it off for the rest of your life.

Building your own house is a basic freedom. Therefore you should be allowed to build and live in what you like. Then if you sell the house, or rent it, maybe you should have to bring it up to the uniform building standards. But if you want to build your own home, you should be able to build something much more simple and basic than you're allowed to now. I mean you have to have all mod cons before you can get an occupancy permit. That's ridiculous.

We lived for five years without electricity and for seven years without plumbing and we were perfectly healthy and hygienic. Plumbing is not a necessity. People have lived for thousands of years without plumbing. You can be just as clean by washing yourself in a basin as you can by having a hot shower or a bath. It's pleasant to wash yourself in a basin in front of the pot-belly stove instead of going down to a cold bathroom.

You've got to have flywire on certain windows. We don't have flywire on any windows. In the summer we open up the whole house and it's beautiful. We don't have a fly problem because we don't have any cats and dogs to pooh everywhere and for the flies to breed there. If flies come in they zoom straight through. I don't cook meat or anything which attracts flies during the day.

We don't have mosquitoes because we've got frogs and tadpoles in our dam that eat all the mosquito larvae.

I can't think of any disasters during the building. Either I'm extremely lucky or I'm a good organiser, but we didn't have any serious accidents. At the time I didn't know anything about the laws regarding scaffolding. Once a bit of mudbrick wall fell down. I had some workers who worked very fast for a change and they built up a bit of wall too fast and it fell down. If somebody had been under it they might have been hurt, but luckily, nobody was.

There are a few things we would do if we were building again, or moving. With the benefit of hindsight for instance I probably wouldn't use a high ceiling, although I'd probably have one big room still with a high ceiling which would be a main living room and gallery combined. Then I'd have the "winter" living quarters with a lower ceiling.

Ideally also I'd have a house that was a few hundred yards away from the nearest bush, but still with quite a large area of bush, so that I could walk in it and enjoy it. It would be on a north slope, so that I could build a proper solar-orientated house.

This house is reasonably good, because we get the morning sun. It's half-orientated. By making the house a *tight* house, by putting weatherstrips around windows and doors and by insulating the roof we now need to use only a very small amount of wood to keep it warm as you can see by the tiny little fire in the potbelly (this was at Easter). It just needs to be revved up a little at night. Also we close off all the curtains at night.

I'm going to try the idea of a canvas tube with a little fan in the bottom to bring the warm air from the top of the house down to the bottom of the house and set up an air circulation movement.

An important point was made in Peter Re's book *Living Shelter.* In one of the houses the people realised what a mess you make around the house when you're building. So in their next house they built from within. They drove all the trucks into the actual building site. They put all the mudbricks and other building materials inside the site. They built the house without damaging or destroying any of the bush outside the walls, so that when they finished the house the natural bush, still untouched, came right up to the walls of the house.

We did something similar by putting our rubbish heap about 50 yards away from the house, near the road and carrying everything by hand, which added quite a bit to the cost of the house.

By not using a bulldozer to level the site, by digging it out by hand by building up the low side and digging out the topside and by putting our dumps of timber a fair way away, when we were finished the bush was there, surrounding the house. This is really lovely and we've got a beautiful garden, with the least effort, due to Neil's foresight.

It's lovely living in the bush. It's got so many advantages. It's an incredible delight to the eye and the soul every time you look out the window.

If I was building on a north slope, I'd incorporate a greenhouse attached to the house which would be used for heating. We all know about these things now, but we didn't then. When I originally wanted to build on the north slope, Neil said: "No, it's much easier to warm a house in the winter than it is to cool it in the summer." But of course if the house is properly insulated and properly orientated and ventilated then it is cool in the summer and you can actually use your cool shadehouse on the south side of the house as a natural air conditioner, as Bill Mollison says in *Permaculture 2.* I imagine that would work.

Another thing. Although our bathroom is regarded by one and all as the most beautiful they've seen, I really like the idea of having the bathroom, in the greenhouse and watering the plants while you have a shower.

We're going to shift our big, black, fuel stove into the middle of the living area where the pot belly is now. Then with the same log of wood we'll be heating the house, cooking food and heating water, all in one, with a water jacket. The pot belly will probably go in the gallery.

Some visitors complain that this house is a bit gloomy, because in modern houses they're mad on everything being in a bright light. Friends who have windows all around their house have found that they're having terrible heat loss in winter and heat gains in the summer. This house is fantanstic in that respect because it hasn't got too many windows. I'm trying to find out more about solar lighting — you know, those white reflective interior tubes that bring in light from outside the house.

There are many advantages in not having too many windows, particularly if you're a painter. You need a lot of wall space for one thing. You don't need to have a very bright house because if you want to read a book or newspaper you can always sit near a window. Why does the house have to be glaringly bright?

Neil doesn't want skylights in here because he thinks it would spoil the look of the roof. Skylights let out a terrific amount of heat during winter and let heat in during summer. So you win some and lose some, I suppose. If it's overcast, you can have a few cheap electric lights on during the day.

Clerestory windows would be nice. I've been pondering over putting a couple up there but they're very European looking.

The biggest problem we have out here is transport. You have to have a motor car. At the moment our neighbour kindly takes Biddy to school with her daughter. Once a week we pick them up, that's the day I go out shopping with Else. We like to go to the library and things like that.

We've got a food co-op, which saves a lot of money and driving around. There are about 30 families in the food co-op and it seems to be working very well. We've been going for over two years. We try to get good quality, non-perishable foods and we've got a local farm where we go that has a kind of unnofficial grocery.

There's always a slight amoung of worry as to whether we're going to make enough money to pay the bills, the rates, phone, electricity and insurance. You can do without them, but...

A lot of people talk very romantically about not having SEC (outside mains electricity). We've got friends up the road who use a generator. They got a very expensive generator and it gives them untold trouble. For years we didn't have electricity. We didn't bother with a generator. We used candles for lighting and LP gas and wood for cooking. Another thing about electric generators is that they're noisy.

All forms of lighting that are not electric are terrible. Candles stink, they've got a horrible smell when blow them out. They're expensive to buy. If you used 40 candles to give you the light of a 40-watt bulb it would cost you the earth, so you have a candle here and a candle there and it's very gloomy and makes you feel tired early, so you go to bed.

Kerosene lamps smell and give you asthma or bronchitis if you're allergic to them, as Neil says he is. The pressure lamps, which you pump up, are economical and good, but they go bung all the time. I've spent my life going into the city buying bits and pieces, vapourisers and this and that and you're forever fiddling with them and poking them.

If you can get *old* pressure lamps that are still working they're pretty good. But the new ones, honestly I had so much trouble with them that I gave up and just used candles most of the time.

Gas lamps on small gas cylinders are terribly expensive to run. We didn't get big cylinder lamps because we knew that eventually the electricity was coming through.

There's just nothing like electric light. It's just wonderful. If it could be generated by solar or windpower that would be great. We haven't got any wind here and there are too many trees around to use solar panels. And we like the trees. I don't like the idea of living in a bare place.

A final word on tight houses. It's important to cut down on draughts, but not to the extent that you get sick. We've heard this has actually happened in solar homes in the United States when houses got so airtight, so insulated, that people got sick from their own pollution!

We settle in

Meralyn Roberts wrote about building a mudbrick house in *Muddy Weekends* (Earth Garden 21, pages 38-40), early in 1978. We recently asked her to comment on what it's like to live in the completed house and any other thoughts or tips she has for owner-builders. "There are five or six other mudbrick houses in our Shire, built since we started, all big and very impressive," says Meralyn.

BY MERALYN ROBERTS

After 2½ years in our mudbrick home what we like best is the warmth, colour and texture of the natural materials and timber and the resulting friendly atmosphere. I'm sure this is true of most mudbrick houses.

You can't help but be mellow along with the house and relax. Stone and age-old buildings acquire this feeling, but even brand-new mudbrick buildings seem to bridge that time gap with the same effect and sensitivity.

Family and friends comment on the tranquil surroundings. Relaxation might be the key word, but it isn't the same as being lazy, or having nothing to do. We are in fact busier maintaining our 20 acre bush block than we realised we would be. We enjoy the work, but it is constant and not cheap. Ray is aiming to cut down his tools to just a slasher and chain saw.

Housework is kept to a minimum. The essentials are a vacuum cleaner for cobwebs and gallons of liquid timber polish for our tables and benches. Window cleaning is a family affair, three times a year, and a bit of a bugbear, as the 400 individual glass panes cannot be hosed down because some of the bricks and timber are not sealed. Rain does not reach many of them, however.

The "colonial" doors and windows look great, but they aren't easy to keep clean.

We were thrilled with our 100 year old recycled rough cedar boards in the bathroom, until it was time to clean off the toothpaste and soapsuds. I would recommend dressed timber for such places.

The mini-basin which we bought for our shower area created many hassles — cracked knuckles and heads, overflows and splashes and cost us as much as a bigger one, with the same amount of plumbing. So, be advised.

Another maintenance job in a mudbrick house is to check for timber shrinkage and stabilising and seal with a silicone sealer or *parge* up with mud. The old way of pargeting was to use a mortar made of one part of mud

to three parts of cow dung. Most draughts have now been dealt with.

Things we would change if (or when) we were building again. We would certainly include more *internal* mudbrick walls. If we had raised our ceiling and wall height by a further three feet, we also could have had a mezzanine floor running 80ft along half the width of the house at little extra cost.

A drain hole in the laundry would have eased my mind the few times I flooded the washing machine. It's an awful feeling watching the water seep up the bottom row of mudbricks. We also should have put down a row of fired bricks as a damp course.

The insulation qualities of mudbricks are really good, both for winter and summer. Our open living area is seven squares, with high ceilings, lots of windows, including the clerestory and no curtains (the bush provides complete privacy), making it an air conditioner salesman's nightmare.

Our open fireplace was the only source of heating for two winters. This year we installed an electric wall heater, which is great on chilly mornings for instant warmth. A pot-belly stove would probably be included in our list of improvements to come.

In a couple of years our carport, I feel, will become a second living area. The *"one big happy family"* idea still works most of the time, but I can see that the teenage years will bring some pressure for a choice of rooms for "them" and "us", especially when it comes to trying to talk to friends over the radio, records or television and dodging kids doing cartwheels. In the meantime the living area, with the kitchen in the middle and open on three sides to bench height, is a success for family living.

The 3ft 6ins "passage" between the front door and the kitchen encourages people to walk in and prop, elbows on the bench, while the bar and stools around the corner don't get used.

I love the blackwood timber cupboards and benches in the kitchen which, though small, is still the centre of the house. One disadvantage of an open kitchen is the noisy dishwasher (serves you right, I hear you say?).

Our only disagreement about the design of the house was the siting on the block. The living area faces east, instead of north and our biggest verandah, 8ft x 80ft, is in the shade by 11 am. Sometimes I chase the sun all day with tables, extension leads and ironing, sewing or my spinning wheel.

The verandahs add 13 squares to the 16 square house and we are now inclined to regard them as activity areas, for playing table tennis and wet weather activities.

Our vegetable garden is only in its second season and the comments by Abbie Heathcote *(It Isn't Easy,* EG 28, pages 24-5) sound familiar to us. Everything we plant has to be protected. The vegetable garden itself has a three foot chicken wire fence, plus a wire which we have seen rabbits jump over.

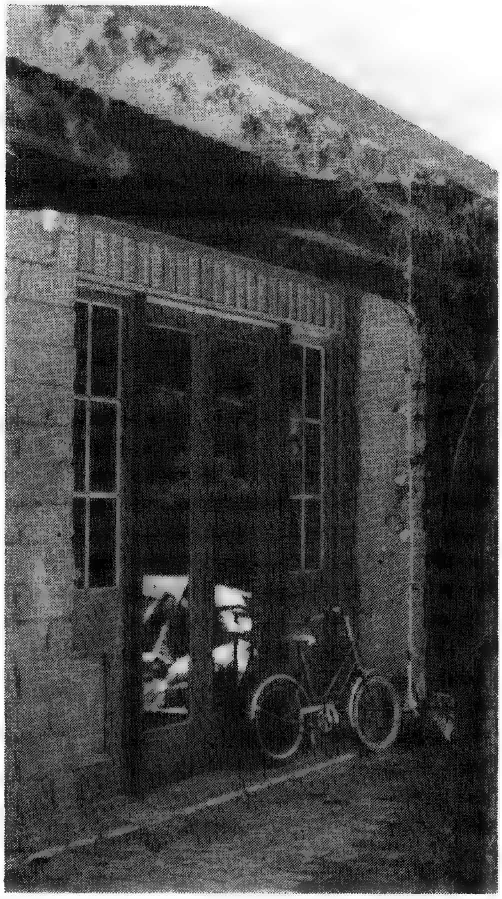
Every tree in the orchard has a guard, some not quite as high as a rabbit's reach, about 2ft 6ins. Local peacocks had a great meal of our first ripe loganberries and nectarines and possums broke a few limbs off our young fruit trees. No wombats at least, but many parrots and noisy miners.

Slugs, snails and bugs are disappointingly starting to appear, but the vegetables are doing well and it's a great feeling to be able to give things away to our green-thumbed parents.

If your soil is virgin ground or bush, don't bring in, or accept gifts of shrubs, cuttings or manure without being aware of the bugs, thistles, couch grass and so on that will probably be imported.

An essential feature of any mudbrick house, we feel, has to be stained glass windows. We only have one panel in our back door and I hope the next 12 months will see the addition of a few more. Being owner-builders, we have never taken our home for granted and always responded to the mood it has created. The result is hopefully a step towards the "Good Life".

BUILDING SKILLS



By Rick Haughton & Dael Allison

Earth building certainly has charisma.

In 1978 we started our own house on a 140 ft x 80 ft block of land in Bouddi National Park. It is a split-level mudbrick structure which we designed in a modified "colonial" style.

Most of 1979 was devoted to building a contemporary adobe house on a small block nearby and last year we completed our own house.

Throughout this period there was a liberal sprinkling of building and design jobs needed to keep the finances flowing.

We started with the block, not much money and a large shipment of 100-year-old oregon which we'd salvaged from a demolished building in Victoria before we moved north and had railed to Gosford.

Seven superb 20 foot trusses dictated the design of the house to a large extent. We also had a big tent in which we lived for the first seven months — until the onslaught of the funnel web spider season.

The Gosford Council was an unknown quantity. We approached them before moving to gauge their reaction to earth building and discovered we were the first to broach the idea in the Shire. The building department's attitude was: *"You can build anything you like, so long as it's structurally sound."* Knowing the problems of many other alternative builders we could hardly believe our luck. We spent several weeks designing and drafting our plans and submitted them to Council which, true to its word, passed them without any problem, so we proceeded to get stuck into it.

We quickly ran into two major problems: *money and time.* A couple of months passed before plans were drawn-up, approved and the house site organised and excavated, but the sheer cost of living, combined with the fact that we had both given up our regular incomes, meant that our limited finances ran down rapidly. Another couple of months devoted to mudbrick making and digging footings chewed up our money alarmingly.

By the time we'd paid for concrete slabs and colourbond roofing iron it was inevitable that one of us had to return to wage earning. Rick went back to conventional building and, with only one worker on the site, progress from then on was slow. The concrete slab was a concession we'd made, thinking that Council's attitude wouldn't stretch as far as brick or earth floors. We've since discovered that this was unnecessary from their point of view and undesirable from ours.

A decade working in the building trade (and gaining a builder's licence) as well as being the owner-builders of a mudbrick home has given Dael Allison and Rick Haughton unique experience in both conventional and alternative construction methods.

The partnership has opted for quality against speculative building (or mudbricks versus brick veneer). They now operate on the central coast of NSW and will build mudbrick homes under contract, or help owner-builders with designs, advice and expertise.

We firmly believe that you can get a substantial amount of building erected for a small amount of money, but think it out well beforehand. Be as organised as possible. If you are thinking of building your place full time, it's a good idea to keep a wage coming in until full-on building starts. Some of the heaviest expenses, such as excavations, footings, roofing and plumbing, come early in the piece.

As for time, we found that a regular job and building for yourself are quite incompatible, especially in an area where interest in earth building is high. Most of our weekends and many evenings were taken up with talking to innumerable visitors.

If you are building in an area where mudbricks are "new" and your land is accessible, be prepared to be overrun by interested or curious people. It's good to work out a policy on visitors before they swamp you. Giving them jobs to do cuts out quite a few.

Over three years the influx of visitors (we've had more than 100 in one weekend) makes an interesting study. In the first year there were many people who were genuinely interested in mudbricks and our venture and in finding out how to start themselves off.

But 1979, when we started the second house, brought a rash of tourists, interested only in filling in a boring few hours. Some of this lot were rude and intrusive, often not even asking if they could inspect the houses and ignoring the fact that we were trying to work. In 1980, we put up signs saying *"Inspection by appointment only"* with a phone number. This allowed us to organise visitors around our tea breaks and get on with the job.

If you've never yet been asked a thousand times: *"What happens when it rains?"* you will once you start mudbrick building. Be forewarned and have a succinct answer ready.

The best visitors, of course, are those who offer to help and it's sensible, again, to have a policy on this. If you've set a standard you hope to achieve on your building, you may need to supervise volunteers. *Laissez-faire* is fine if you are prepared to incorporate an out-of-plumb wall into your house, or to take down and rebuild unsuitable work or badly made bricks.

The romance of the mudbrick often obscures the reality of hard work for the casual visitor. Don't be surprised if ardent enthusiasm evaporates after half an hour or so.

Interest generally revolves around mudbrick making rather than construction and this part of the work, despite its repetitiveness, can be a rhythmic, enjoyable and mentally relaxing occupation for everyone from small kids (Meggsie, a four-year-old, put in a number of hours brick making and she was a great help) to grannies. We organised mudbrick days, when we invited all the people interested in "getting into it" to come along, with much resulting hilarity and fun and a good tally of bricks at the end of the day.

However, there is no way around the fact that earth building is extremely hard work. It is satisfying and fulfilling, but can often be tedious, back-breaking and occasionally discouraging. More often than not the results of weeks of effort are barely visible and critical comment from onlookers can be exasperating. We've also had a thin but steady stream of people, both versed and unversed in mudbrick techniques, who felt they should point out that we were doing it *"the wrong way"* — whatever that may mean.

You learn to rely on your own experience and that of other doers and achievers. A "purist" approach to mudbrick making may be nostalgic, but it is impractical if you have the mechanical means to make the job easier.

As far as mudbrick making techniques are concerned, we've done a lot of experimenting and have found our approach is dictated by (a) personal preference, (b) the tools at our disposal and (c) the type of mud mix to be dealt with.

Boots and shovels are fine if you have a mix that contains a fairly low clay content — 50 per cent or less. The more clay you incorporate, the more difficult the mix can be to work. The bricks in our own house have approximately an 80 per cent clay content. They are good strong bricks, very hard, resist water well and for some reason didn't have the bad cracking problem we expected from such high clay content.

Our early excursions into the mud pile in bare feet were rapidly abandoned on the basis of only one criterion — *pain.* Our soles and ankles were shredded by the small sharp stones in the mix. Gumboot treading was also a failure because the boots were quickly sucked off our feet by the clinging mud. Spades and forks were ineffective too. So we settled for using our tractor, a decision made easier when we were lent the vacant block next door, doubling our working space for brick making.

Using the tractor and blade we settled for the following method: We laid out a pad of the dry clay and subsoil, about 4 inches deep, covering an area of about 25 square metres, enough for about 150 bricks. We went over the pad with picks and mattocks, breaking up clods and throwing out over-size hard clay lumps and rocks.

We sprinkled this with straw, (about one bale, unchopped, to 200-400 bricks), drenched it with water, rolled it into a heap with the tractor and blade and left it to soak overnight. Early next morning the mix was re-wet, worked over with the blade and the tractor wheels and then raked out into a thin windrow along the length of the area where we were to work.

Usually two or three people worked together at brick making. This is an efficient working number and we found more tended to trip over each other. We worked with a five brick mould, finding this easy to lift and not too heavy for two women to handle. Rows of five are easier to count as well!

Brick sizes were 15 ins x 10 ins x 5 ins (375 mm x 250 mm x 125 mm) and weighed about 33 lb (15 kg) which wasn't too heavy for a woman to lift when half dry for stacking, or later to chest level, for laying. Three people could usually make 50 bricks an hour. We'd produce about 150 bricks each morning, then knock off before the heat set in. We covered them with straw to prevent cracking if it was a very hot day.

In summer, the bricks were usually ready to turn on their sides in 1-2 days, to turn on their ends and trim a day later and to stack a couple of days after that. We covered them with plastic if it looked like raining heavily.

Our construction techniques followed normal brick laying and carpentry practice to a fair extent.

We sieved our mortar (slightly less clay than the brick mix) through a wire bed-frame into a bath partly filled with water and mixed by rake or by foot. The bath can be moved to wherever you are working. We used a wettish mortar as the dry bricks rapidly suck moisture out of the mud.

Mudbricks are easy to lay as long as you use levels and string lines, that is assuming that you want an even finish. We used barbed wire as reinforcing for the bricks, stretched every fourth course.

We generally used a post-and-beam construction technique in our designs, erecting the roof first and using mudbricks as infill. Mudbricks are excellent in a load bearing capacity, but when living in a high rainfall area, as we are, it is practical to put up your roof as soon as possible and be able to store materials and work underneath.

Also if the owner-builder wants to employ a carpenter to erect the roof, it can be done simply and quickly by the post-and-beam method, giving unlimited scope for later decisions on door and window sizes and positions while actually "living" in the unwalled house.

Earth construction is *"dirt cheap"* only if you do it yourself. Most people want a mudbrick house designed and built for them on a limited budget. This is fine if they put in a lot of work on it themselves, but the basic fact is that earth building is labour-intensive.

There is a vast difference between having 1200 fired bricks delivered and laid by tradesmen and spending several months making and laying the bricks yourself. If a client is paying a builder for the hand made product, then the time factor becomes expensive and the house will not be cheaper than a conventional building (even though the product will far surpass it). If, on the other hand, an owner-builder has limited funds but unlimited time, obviously the more achieved by this labour, the smaller the capital outlay.

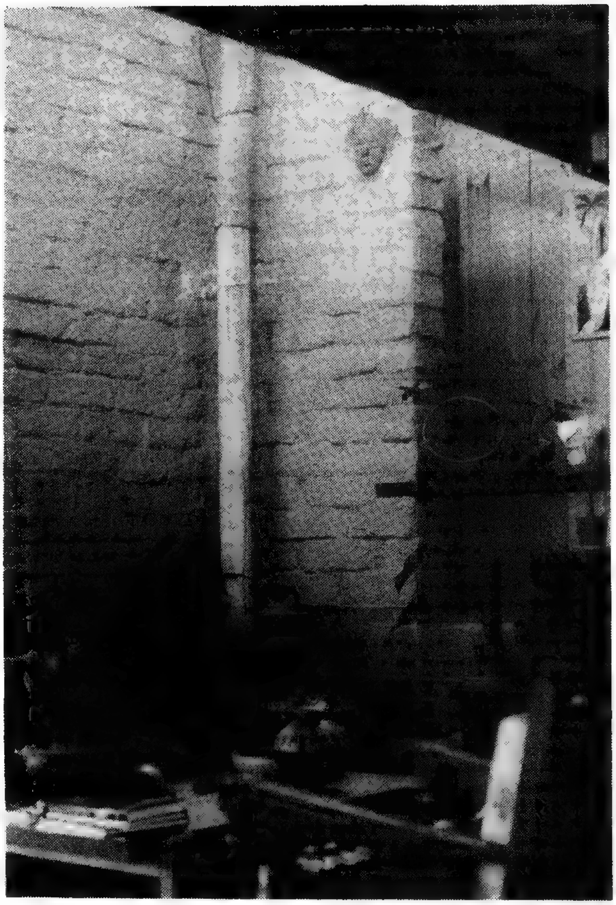
Providing his own shelter is man's inherent right. The owner-builder should be applauded in society and not regarded as a crank pursuing the impossible, as is often the case.

Restrictive rules and regulations are accumulating alarmingly and rapidly. Such rules are oriented in favour of the "qualified" tradesman and encourage the belief that only people specifically trained in that direction have the skills to build. This is often a fallacy of course. Being trained for a desk job does not automatically take away a person's innate practicality.

We've been staggered at the number of people we've met who have considered building their own home an impossibility. This conviction is cemented by policies of institutions such as lending authorities, which place many limitations and obstacles in the path of potential owner-builders before coming good with the cash. Their argument is a time/quality/repayment one. They veto any possibility that the owner-builder may be able to build a dwelling more cheaply than a contractor, but also that he or she will probably put more effort into creating a worthwhile result.

Overcoming this opposition is a slow process. In Victoria it has taken 30 to 40 years to persuade any institutions to provide finance on any earth built house, but there have been breakthroughs. In New South Wales, banks and building societies offer no long term loans on earth homes, although one client has recently had success with a house which is partially mudbrick.

Earth building has always been a hard medium to pioneer. Our previous experience in Victoria of Council contact with earth builders has been a jumbled mixture of some co-operation with a lot of mistrust, rejection and confrontation. However in NSW, Gosford Council and some neighbouring Shires, particularly Wyong, actively support the medium.



Media coverage has been considerable and more than favourable. Practical support is also coming from interested individuals and institutions which are investigating earth construction techniques. Exhaustive studies on the properties and potentials of earth building have been carried out and people like Brian Woodward of the University of NSW (see *Earth Housing*, Access 1, E.G. 22-3 pages 119-120) have amassed enough material and evidence to make any Council baulk at rejecting an application on structural grounds. Such studies provide a welcome reference to the owner-builder.

Owner-builders have a fair amount to come to terms with, often well beyond their previous range of experience. Many cope with the financial problems by working to earn money as the need arises, but other problems are inevitable. A lot of money can be *saved* by doing the bulk of the labouring under the supervision of a sympathetic tradesman.

A few drinks at the "local" often proves valuable in providing a range of potential assistance and sources of materials. Let people know what you plan to do. Interest in earth building runs high (though there will always be sceptics) and we've found that people like to be involved.

Despite the drawbacks the mudbrick owner-builder has it made. You can work to your own design (there is no problem in having it drawn up by a draughtsman if you can't do it yourself) and design to suit your block of land, its contours, outlook and environment without having to work with the average builder who refuses to attempt the job because it's unusual.

You can incorporate a multitude of materials, hand made, found or renovated, because a hand crafted house is complementary to these things.

While sticking to the basic plan, you can make changes as you progress and think of better ideas. Even if you have to submit these to Council for permission, there are at least no arguments with the contractor. A wall can be curved or sculptured, faces or patterns can be moulded in the mud (like our *"Lady of the House"* shown in the photo) and twisted timbers from the bush can be built-in.

Large amounts of glass can be used, despite the widely held belief that mudbricks and expanses of glass are incompatible due to heat loss. Mudbricks have far more effective insulation properties than fired bricks and gyprock.

Obviously, good design is important, taking into account *all* environmental possibilities and as many energy efficient factors as practical. Time and money will govern a great many of these factors, but a little imagination and forethought can allow for more innovation later, for example designing a solar convection system into your roof, or cladding it temporarily with iron until you can afford to complete the original idea.

One of the most appealing aspects of building for yourself and using your own creative ideas is that of working to a different ethic. Time can be used differently. In an age when we are surrounded by brick veneer houses that are flung up in 6 or 8 weeks, it can be a pleasure to take years, or a lifetime, to finish your own house; starting with your immediate requirements and building on as your needs and fancies arise.

We provide a service of mudbrick design and consultation for owner-builders — people capable of doing all or part of the work of building their homes themselves. We consult on design, taking into consideration all aspects of the site and the potential builder's needs and preferences, however unusual.

We draw up plans and specifications and we provide the information, guidelines and expertise necessary to start the work off in the right direction and keep it going that way. At present we operate on the Central Coast of NSW, but we are prepared to travel farther afield.

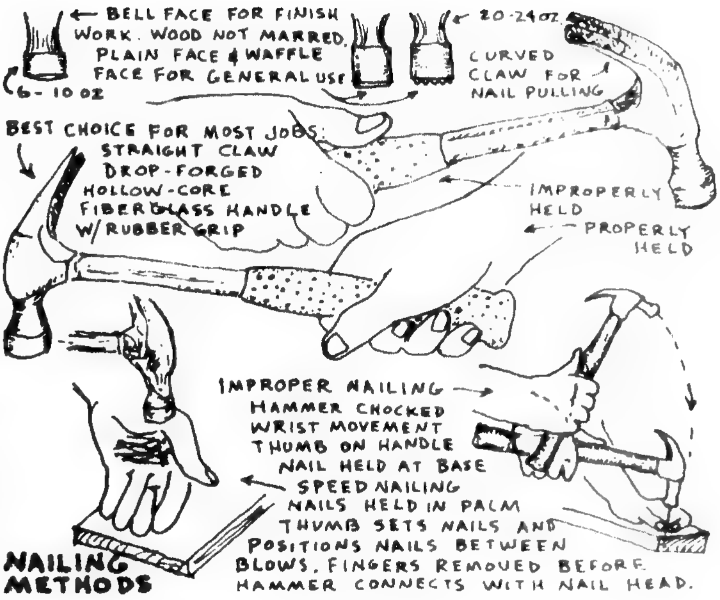
We can be contacted at: *Allison-Haughton Builders* (BLB Licence No 21896), MacMasters Beach, NSW 2251. Phone: (043) 82 1872.

PISE COMPACTOR

We have for sale a mechanical earth compactor, like the ones used for roadwork, for $350 or nearest offer. It is a petrol driven Wacker BS20, which we used to build our 35-square house (for two families) in pise-de-terre (rammed earth).

It may not be the traditional method, but it was much quicker as we finished the walls in 3½ months. The house is now three years old and the walls are standing up to the weather extremely well — and also look terrific! We have learnt and adapted a lot of information on pise through our building experience and would like to share it with anyone interested.

Please write: Sue Garrood, Oakley Road, McLaren Flat, South Australia, 5171.


← BELL FACE FOR FINISH WORK. WOOD NOT MARRED.
PLAIN FACE & WAFFLE FACE FOR GENERAL USE
6-10 OZ
20-24 OZ
CURVED CLAW FOR NAIL PULLING
BEST CHOICE FOR MOST JOBS: STRAIGHT CLAW DROP-FORGED HOLLOW-CORE FIBERGLASS HANDLE W/RUBBER GRIP
IMPROPERLY HELD
PROPERLY HELD
IMPROPER NAILING → HAMMER CHOCKED WRIST MOVEMENT THUMB ON HANDLE NAIL HELD AT BASE
SPEED NAILING NAILS HELD IN PALM THUMB SETS NAILS AND POSITIONS NAILS BETWEEN BLOWS. FINGERS REMOVED BEFORE HAMMER CONNECTS WITH NAIL HEAD.
NAILING METHODS

THE WORK BOOK

Personal Politics of Building Your Home

Ken Kern & Evelyn Turner, owner builder publications, North Fork, California, 1979, paperback, illustrated. Price $US10.00 posted from Box 817, North Fork, California 93643, USA.

Ken Kern here combines with his sister Evelyn, a psycho-therapist, to produce a "how to feel it" and "how to think it" book for the owner-builder.

In interviews with a group of owner-builders they examine the mental and physical stresses and the strains on personal relationships that go on while building a home. Some of these couples broke up in the process.

This is a work for planners and doers. Separate sections look at building from the materials, methods, sequence and design aspects.

The houses are interesting too. They include a mudbrick dome, stone and timber homes and a core house that may be added to as needs demand. So are the people, like Eleanor, a slight, 39-year-old Oriental lady who had difficulty using a hammer at first, but ended up building a two-storey home. "I was looking for a man before the house," she says. "Now I have an affair with building."

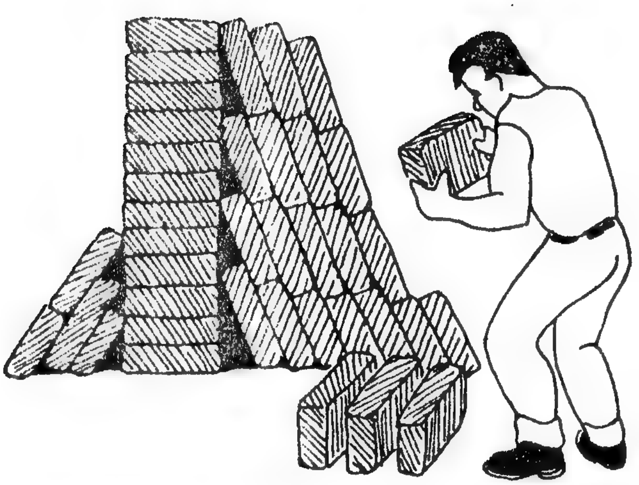
Reading this thorough analysis of the first time building experience might save an expensive visit to the analyst after the house is built. Some quotes from builders:

Art Grau: "It seems that there is a lot of failure in success. We've been rebuilding since the day we stopped building! And although it has brought about much stress, it has also brought about much innovation."

Dave Bowman: "Building can take a lifetime, and friends soon tire of all work and no play."

Margie Helgeson: "We learned a lot about building, about working together and facing the nitty-gritty problems of life while we built our home . . . Being able to build your own shelter is such an important step toward self-reliance."

A work system



BY NEVILLE ACKLAND

I'd read lots about how to build in mudbrick. But, as usual, when I began to put the theories into practice, many unexpected problems cropped up.

The first difficulty I came up against, conveniently ignored in many books and magazines, was how to get the soil out of its home in the ground. All the experts agree that summer is a good time to make mudbricks. But in South Australia summer provides would-be mudbrickers with two backbreaking problems — the intense dry heat and the rock-hard soil (not to mention thousands of bush flies and the lack of water).

Under these conditions, digging, mixing, making, turning and stacking, three very fit, hard workers can make about 100 bricks a day, but may need hospitalisation for a week in order to recover from their ordeal.

I am yet to find an earthy gardener capable of sticking it out for 8 hours unless he's doing something he loves. Endurance and consistency are not part of the new age consciousness here. So I had to make it easier for everyone concerned and this is what I did.

I hired a big backhoe at $24 an hour. The operator dug several underground water tanks and levelled a house site. This took about four hours. We were left with some very impressive holes and mountains of soil. We then dug a square pit, about 12 inches deep, as close as possible to our mountain, filled it two-thirds with water and began shovelling soil into the water and sprinkling straw occasionally.

When the water was no longer visible, being covered with a fine layer of soil, I implemented phase 2 of my energy saving plan and drove the front wheels of the tractor into the pit, backwards and forwards, mixing the mud in a few minutes. Our pit held enough mud for over 100 bricks. We loaded the mixture into barrows and carted it the shortest possible distance to our moulds, dumping the mud on a sheet of corrugated iron next to the mudbrick makers.

Our moulds are simple and work well. They are made from dressed pine, make two bricks at a time and are operated by two people. Unlike conventional moulds they have two pieces of plywood with a handle on each that are used to press the bricks from the mould as it is lifted from the ground. The plywood lids must be a good fit — 5-ply is better than 3-ply.

After two or three tries, two people using the double mould and the plywood pressing method, can make beautiful bricks without needing to wash the moulds between fills. There is no need to wet the mould to get a brick out.

Bricks should be made as close as possible to the building site and turned on their edge after a few days to dry properly for a couple of weeks (in summer), then stacked next to the building site.

Using this method three people working with a will can make 300 bricks a day, but only if the person barrowing the mud is fit and constant, as it is up to him how quickly the others work. After 100 bricks or so a rhythm is established that would make the pioneers proud.

We have a rule that we knock off when the temperature climbs over 40°C (in the shade of course). Nevertheless, if we start at 7 a.m. we can make 200 bricks by lunch and go swimming all afternoon, start again at 5 or 6 p.m. and work until dark, still achieving over 300 mudbricks.

Several weeks of this (with Sunday afternoon off) solves the problem of "what shall we do tonight dear?", guarantees zero population growth and sends liberated women scurrying back to the shelter of the kitchen.

Mudbricks *are* fun! Especially *after* you've made them.

Why make 300 bricks a day? Many people would be satisfied with 50, in fact a group of 8 people having had the mud premixed for them managed only 50 bricks in a day here last week. They seemed very happy, with more mud on themselves than in the moulds.

The ladies were quick to take advantage of the age-old mud bath beautifying process the guys were all anxious to help in the application. It was fun. There was no pressure.

But when you have 5000 bricks to make, plus mortar to mix, and when that's just another piece in the jigsaw puzzle that is to be your house — which must be finished before the baby comes — 300 bricks a day is chickenfeed.

ADOBE DESIGN

I have just finished architecture and am now struggling to set up a design practice specialising in mudbrick (adobe) and environmental architecture. I am more than happy to help anyone here in South Australia who is interested in mudbrick housing, design, or on any problems they might have.

Richard Tossani, 3 Sophia Court, Magill, South Australia, 5072.

Herbs on the roof

BY MICHAEL BAILES
of The Fragrant Garden

Having seen an experimental building at the University of New South Wales (at Kensington, Sydney), with a sod roof — we were hooked.

Traditionally sod roofs are laid with turf. As we run a nursery specialising in old-fashioned romantic plants, the thought was — *why not grow herbs on the roof?*

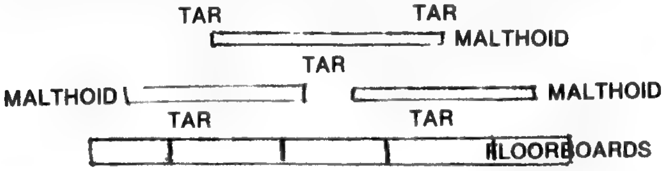
This began a saga which still continues. We found very little information on sod roofs while we were building and nobody seemed to know much about the technique. Ironically, one turned up called *Local Materials* written and published by Jeff Kahane, with an article on the subject, just as we had finished. This will be available from *The Fragrant Garden* soon (see footnote).

To the normal problems of building a sod roof we added another: our roof was to be constructed totally of radiata pine and timber. Unless we wanted our roof to turn rather rapidly into a compost heap, we obviously had to protect the timber.

The experimental building at the University, built by Brian Woodward and the Earth Construction Research Group (see *Earth Housing,* Access 1, EG 22-3, pages 119-120) had used builders' paper, which later proved to be unsuccessful.

We decided to use brushable tar (which you can buy in 4 gallon drums) overlaid with *malthoid,* a tar-impregnated felt. Later the University adopted this idea.

The tar was first painted over the floor/roof boards, then the malthoid laid over this. More tar was painted over the joints in the malthoid, then more tar, as shown.

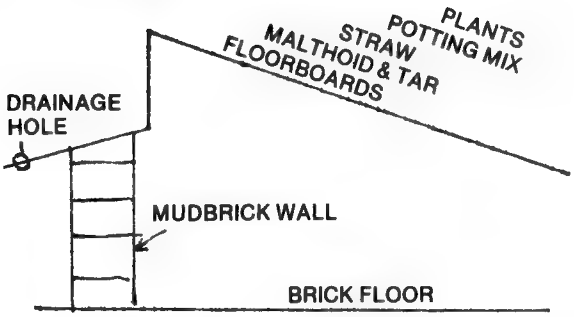


Having waterproofed the roof we were then confronted with a vast area of black which had to be covered with living plants. Normally — well at *ground* level — one would simply ring up the Ajax Turf Co and order turf to be laid. This would have been an interesting telephone call!

However, we had to put potting mix on the rooftop, which had a pitch of 30° to 45°! The first rain would have caused a large brown waterfall as the roof slid into oblivion.

We pondered this problem for some weeks. Could we tie on the soil with wire? How do we get up there? Perhaps with some sort of conveyor belt? Using 1000 Chinese coolies with buckets? When is *Bob-a-job* week?

One day, in a fit of foolhardy inspiration, we tried a variation on the "no-dig" garden. We covered the roof in 6 inches of straw. We then covered this with potting mix. We filled buckets with soil, producing overarm chucks that would have done a cricket ace like Dennis Lillee proud.



The job was completed in a surprisingly short time, with no torn muscles. What would happen when it rained? Perhaps we could get the plants going before the heavens opened? Alas. That night it poured. We wondered if all our efforts would be washed away into the bottom paddock. Surprise! Surprise! The straw caught the soil and hardly any washed away. We were delighted.

Has it worked well? Two years later we have learned:

1. Don't plant a sod roof in the middle of a drought — you never have enough water to grow the roof.
2. Grow hardy herbs like *sedums* and *houseleeks,* not water-loving plants like violets. The houseleek has an added bonus because it will protect your cottage from lightning and others of Jove's nasties.
3. The malthoid is not as successful as we would have liked. It has sprung some leaks (note spelling) in some very heavy rain, particularly in areas where weed roots have damaged it.

Although it is fairly easy to take up a tar brush and patch it up, we are concerned that there is a breakdown in such a short time. We are looking at some new, rubberised compounds coming on the market. Any suggestions?

If you like some more information on how we built our mudbrick gallery and pictures of the roof garden, please send three 22 cent stamps and we will post you an illustrated information sheet. We also carry a number of good books on building with mud.

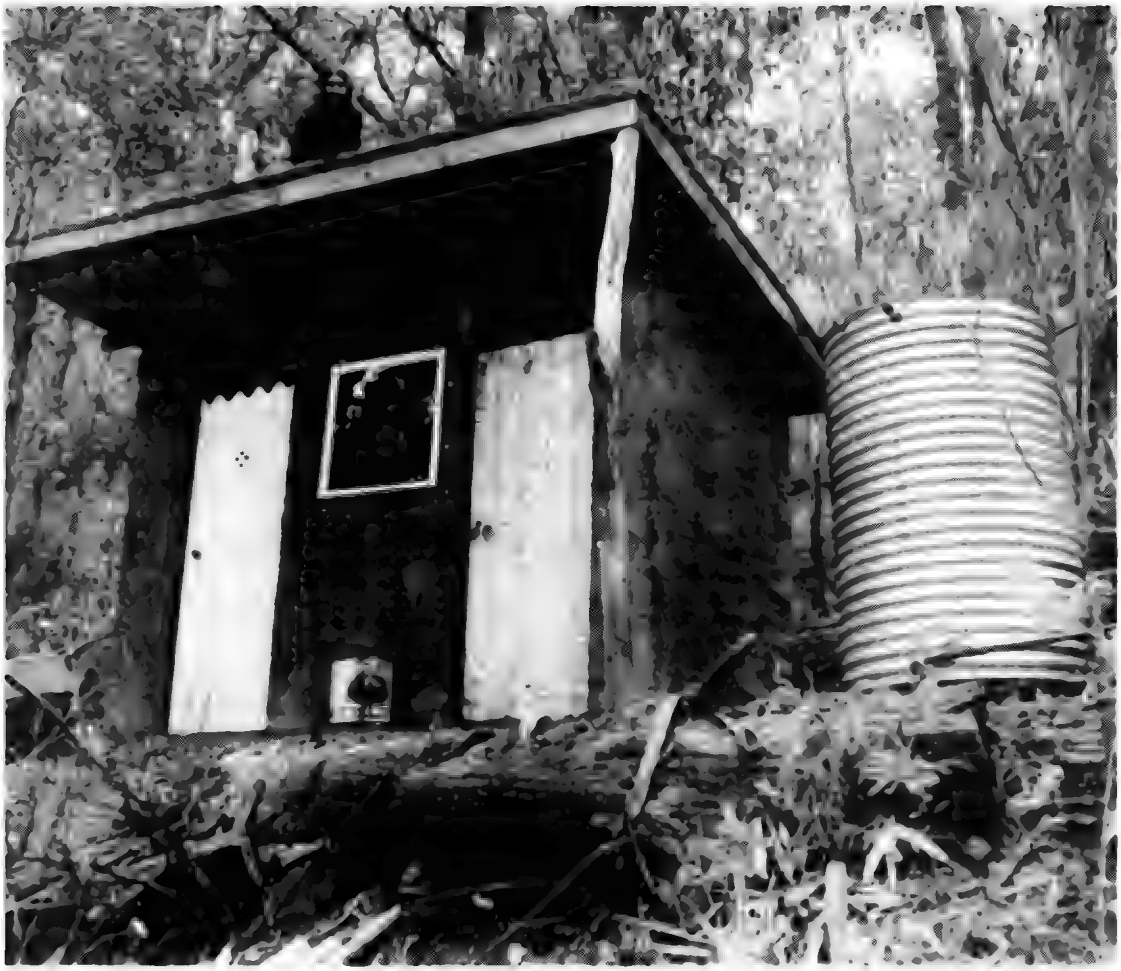
If you would like to see the result of our labours take a look at Jan with the finished sod roof gallery in the bottom photo of the back cover of this issue of *Earth Garden.*

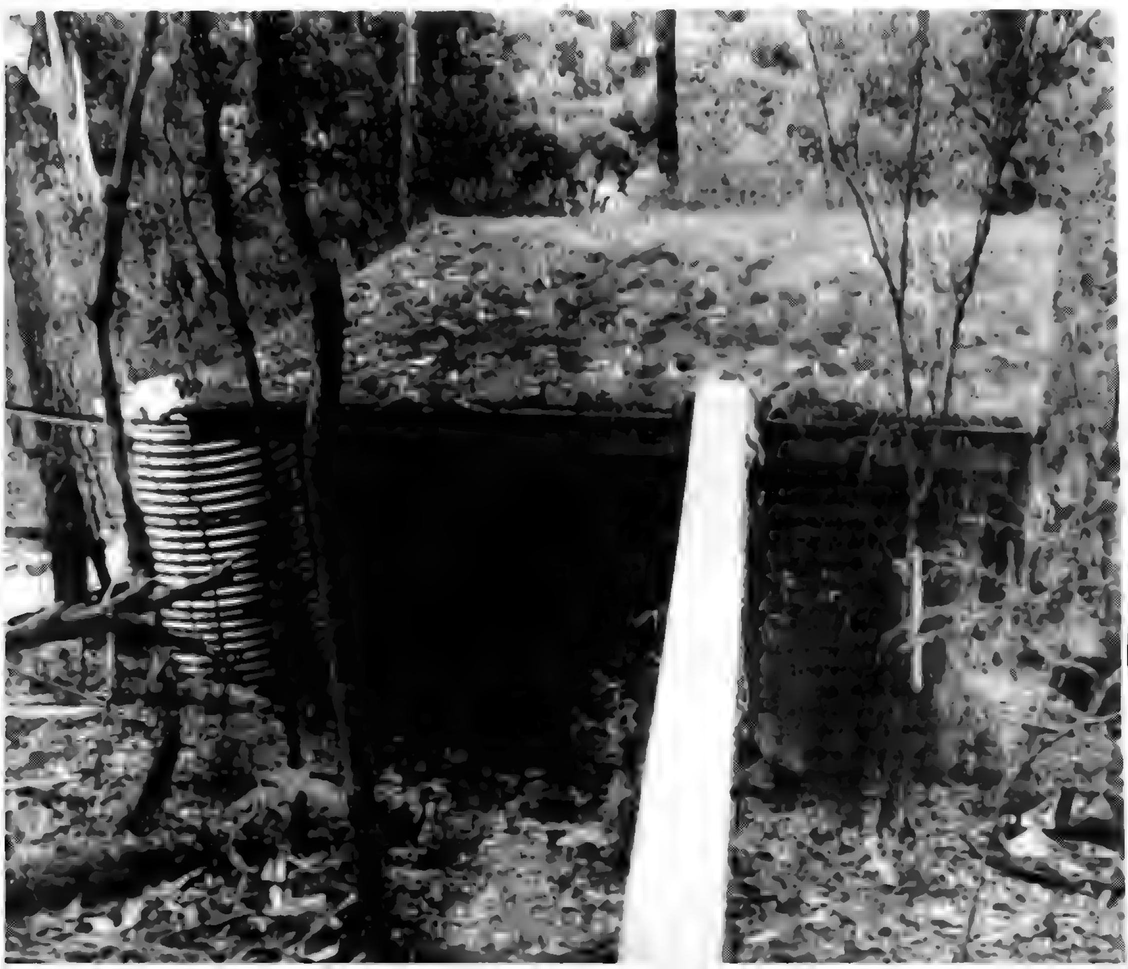
Happy sodding, Jan & Michael Bailes.

The Fragrant Garden
Portsmouth Road, Erina
NSW, 2251

Jan and Michael Bailes have a beautiful herb nursery, with over an acre of potted herbs and 1½ acres of garden (mostly on the ground) which is open daily from 10 am to 5 pm.

Their 30-page mail-order catalogue, listing hundreds of herbs, herb books and dried herbs, costs $1.50 posted. These are also for sale in the sod-roofed mudbrick gallery which you can see for yourself if you visit.





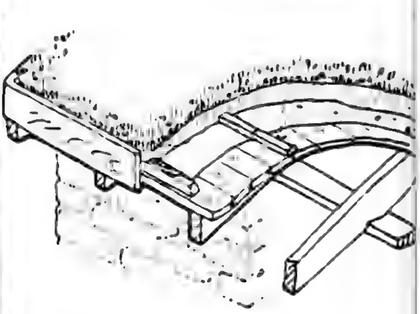
SOD IT!

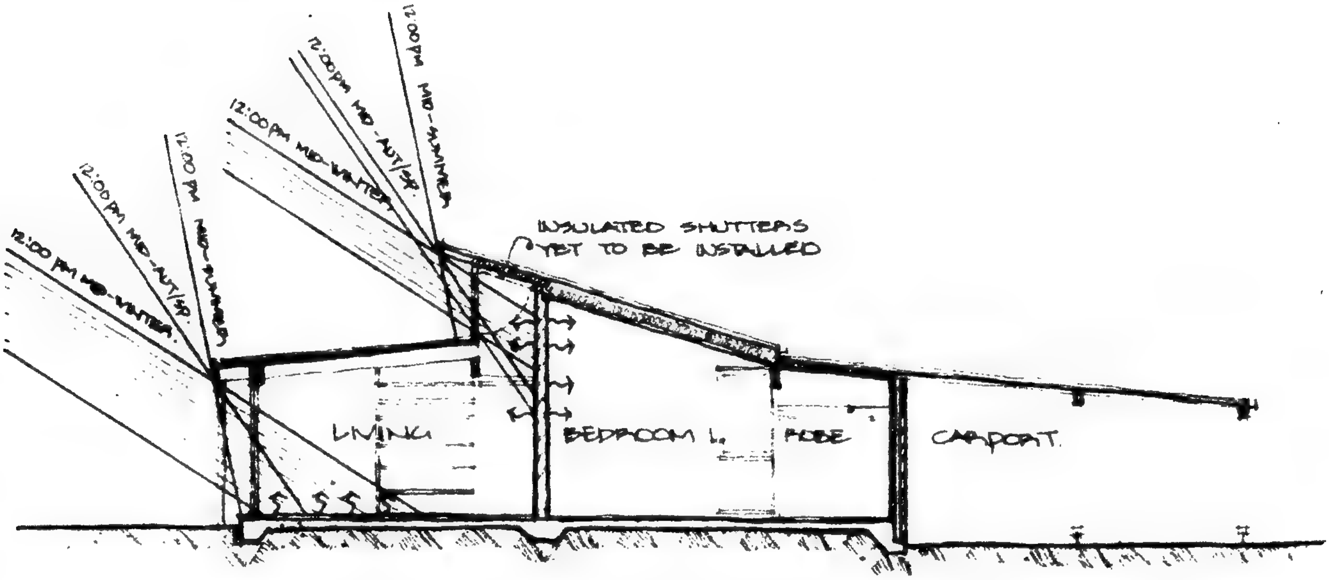
The sloping sod roof on top of this bathroom and toilet unit in the bush acts as a filter to collect rainwater which runs into the 500 gallon tank next to it. The water is then pumped uphill to a 1000 gallon tank to provide storage and pressure to supply hot and cold water to the bathroom.

The framework of the building is interwoven sapling to which chicken wire was stapled as a base on which three layers of mud with 5 per cent cement was laid by hand.

The most watertight sod roof construction consists of wooden decking with small wooden battens nailed across it to hold in moisture and stop soil slipping. A thick polythene sheet goes on top of this, then soil and finally the turf, flowers or herbs.

Planks (or bush logs) around the edges provide the framework to hold in 3-4 inches of earth. Sod roofs are organic, very good insulators, hygienic percolators, but heavy (keep this in mind).





Energy efficient -by design

BY RUSSELL WOMBEY

At the end of 1975 I had successfully completed a university course in architecture and had developed a strong interest in energy, especially those aspects related to the built environment.

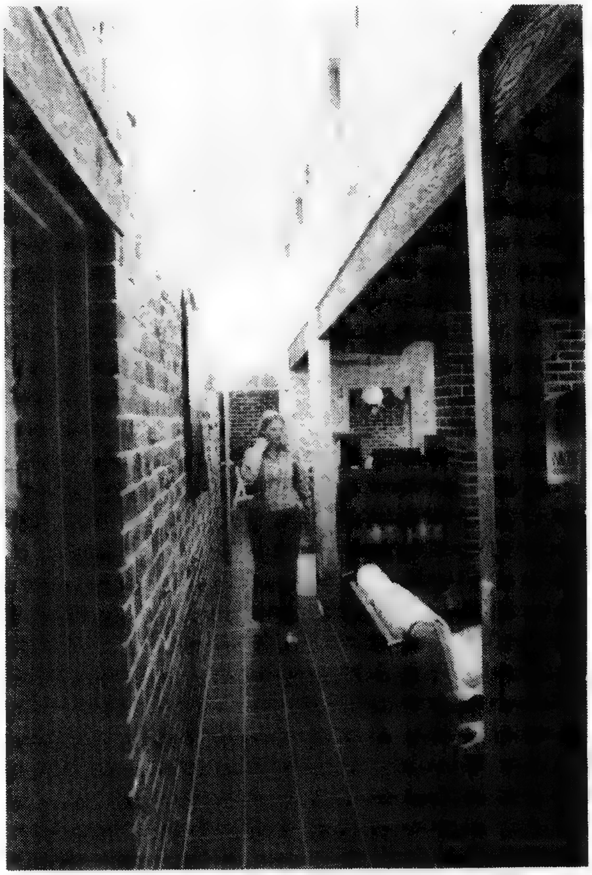
After much deliberation the decision was made between Margaret (my wife) and myself to buy a residential block in Canberra and to design and build an energy efficient house.

Finding the right block was a hard task. Of the blocks available at the time very few were ideally suited for making the best use of solar heat in winter. However, a suitable site was found in Kambah and purchased on a 99-year lease.

This was late in 1976. At the time very little was available on passive or low energy design for Australian conditions, let alone for Canberra's temperate climate. We put together our design from what overseas and local literature was around, adding a great deal of common sense.

The initial aim was a simple passive design, with no mechanical solar house heating system. We wanted to incorporate sound energy conservation concepts to achieve a comfortable home for year-round conditions. Quite a challenge!

These were the design points of the eventual building:



Margaret next to the brick thermal storage walls, with light from the clerestory windows above.

- Block location — Kambah, ACT (Canberra latitude is 35°S).
- House orientation — east-west axis lies 100° east of north. In other words, the north elevation faces 10° east of north.
- Glazing — maximised to the north, with extra northern glass in the form of a roof light running east-west across the centre of the house. Minimum glazing to all other elevations.
- Solar heat gain — by a passive process (direct gain), allowing sun penetration when required, through the glass, storing the heat within the materials of construction.
- Thermal storage — house construction of brick walls, a brick fireplace, quarry tiles on concrete slab floor.
- Insulation — slab edge: 50 mm polystyrene 300 mm deep. Brick cavity walls: 50 mm ureaformaldehyde (still to be installed). Brick veneer walls and timber framed walls: 100 mm fibreglass blankets cut to suit. Ceilings: 100 mm fibreglass blankets cut to suit, with double sided sisalation on both sides.

Note: Vapour barriers were installed in the form of sisalation or plastic sheeting where appropriate and always on the warm side of the insulation, to reduce the potential condensation problem.

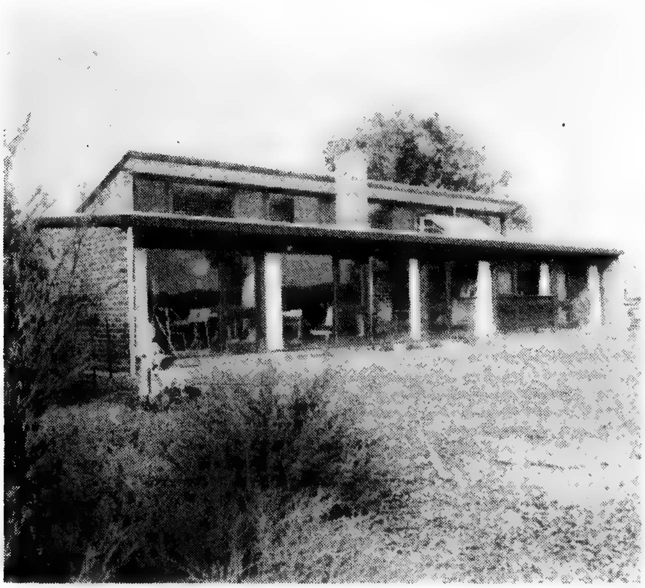
- Glass — hinged polystyrene shutters to roof light (still to be installed). Reflective linings and good quality internal curtains to all other northern glass (linings only installed so far). Tracks fitted to closed pelmets.
- Weathersealing — all construction gaps have been sealed. Windows and doors still to have weatherstripping fitted.
- Heating — solar contribution approximately 50-60 per cent. Electric elements cast into the screed in the living areas. *'Heatform'* heat recirculating fireplace centrally located in living area for minimum heat loss. Air supply is through a duct direct to the outside air. A 'C' form hollow grate is intended when finances permit. Floor heating was used only one weekend so far, last winter.
- Cooling — night time cooling of the internal mass in summer is assisted by good cross-ventilation, particularly through the operable louvres in the roof light.
- Domestic hot water — provided by a forced circulation *Rheem* solar system, using two 1.5 m collector panels, located on the northern roof plane at approximately 40° to the horizontal and a 270 litre storage tank located in a false ceiling above the laundry. The system is electrically boosted, with the element being switched off for around one-third of the year.
- Landscaping — will greatly assist in tempering the extreme climatic effects on the building envelope, particularly from cold winter winds and hot summer sun and wind. The perimeter of the block will be mass planted with native species of various heights and densities, depending on the exposure. Deciduous nut trees, grape vines and vegetables (and some lawn) will occupy the space left between the mass planting and the house.

Building has taken almost 3½ years to reach a stage suitable for occupancy and we have built as much of the house as feasible ourselves. The project has been a tremendously rewarding experience and a successful experiment. House cost was around $40,000, which includes all floor finishes, solar water heating system and carport.

The house has three bedrooms, a family area including the kitchen, dining-living room and a study. Outside walls are of cavity brick, brick veneer and timber frame.

The operation of the house if fairly basic. Shutters and curtains are opened on sunny winter days to allow solar gain and then closed at night. This is reversed in the summer.

House performance is better than anticipated, particularly since some important energy conservation principles have yet to be included, for example roof light shutters, extra curtains, landscaping. Internal conditions remain surprisingly constant, requiring minimal additional energy to achieve comfort. The house is not being monitored — just being lived in.



Northern elevation (with Kelly).

Western elevation.

more land lines

We have bought some land in Carpendeit, 25 miles south west of Colac, Victoria, or about 110 miles southwest of Melbourne. We have formed a trust, "God's Good News Community". We invite you to come for a visit, stay a while or join our community. There are 178 acres of stony rises country and volcanic soil, lots of rocks, bracken, rabbits and some tiger snakes. We hope to become as self sufficient as possible, as soon as possible. We will use a lot of permaculture ideas and alternative energy. The Shire of Heytesbury has approved our using the basalt rocks for building and will allow four building permits.

God bless you in his will, Patricia Dunn, Lot 10, Homestead Road, Orchard Hills, NSW 2748.

Orplid is a vegetarian guest house on the Tamar River, Tasmania, where you can have a rest and gain new energy on our 7 acres. You can also learn and practice organic gardening, crafts and a wholistic lifestlye. During winter, one or two persons could come to work and learn for board and bed. Only vegetarian meals are served. No smoking.

Peace and Harmony, Orplid, Kayena RSD, Beaconsfield, Tasmania 7251. Phone (003) 94 7174.

Unusual opportunity for strong, intelligent young man to learn all phases of horticulture and a chance to understudy a 70-year-old active gardener now living on 10 acres of tropical gardens at Mareeba, North Queensland. Training on the job in nursery, orchard, landscape design and construction, and simple living. Dope and excess grog barred.

Send SAE to "The Hermit", Bruce Arthur, PO Box 186, Mareeba, Qld, 4880.

I am 69-years-old, still quite active and have a property on the Burnett River, near Gayndah, Queensland. A friend, aged 73, has a market garden and grows flowers. There are custard apples, Queensland nuts, guavas, figs, bananas, and the odd lemon, orange and mandarin from the orchard owned by my late father.

We are growing older and considering going ⅓ : ⅔ share basis with a reliable, trustworthy young couple. There is a caravan on the property, a good size, for $1,400. We love animals and birds, peace and quiet.

(Miss) Stella S. Hill, "Ebenezer", 76¼ Mile Siding, Gayndah Line, Queensland 4625.

Wanted to sell: Retirement or holiday home, on the seaside at Bridport on north-east coast of Tasmania in a temperate, frost-free area, home on two landscaped hectares with views of bay, Flinders Island, etc.

Details from G. J. Heyes, Henry Street, Bridport, Tasmania, 7254.

We have a beautiful, isolated 100ha property near Kangaroo Valley, NSW, about three hour's drive from Sydney. For the last five years we've worked here, building, setting up our own energy and water systems, raising our two children (now 7 and 4 years old) and recently established Angora goat stud.

However, as ex-Sydneysiders, we have retained interests and involvement with the city and also enjoy travelling. We would like some folk (preferably with children) to simply keep a caring watch over the goats from time to time while we're away, or else to become involved in developing a community on the property, or something in between.

Please write: Jim & Sandra Dingle, C/- PO Fitzroy Falls, NSW, 2577.

We are looking for a beautiful block of land (10 acres plus) in its natural state, suitable for establishing a home, a reasonable distance from Nambour, Queensland. Our plan is to move north later this year and create something new — in mudbrick. We would appreciate terms to secure, as we aren't rich and our money is tied up in our present home.

Please write: Max & Trisha Richards, 35 Harold Street, Ascot Vale, Victoria, 3032.

In the north of Gippsland, Victoria, in a secluded valley through which the Suggan Buggan River runs, we own a 400-acre block that we must sell for financial reasons. Soil is rich and fertile, with low rainfall, but half a mile of river frontage to supply water. a road and State Forest form other boundaries.

The land is covered with Murray Pine and White Box timber, except for natural clearings, with many forms of wild life. Close access to the wilds of Kosciusko National Park and the Snowy River. We are asking $16,000 (negotiable).

Contact David Saltmarsh, 260 Lawrence Road, Mr Waverley, Victoria, 3149. Phone: (03) 233 3960.

We would like to find a place on the coast above Brisbane to as far up as we have to go for a certain amount of peace and quiet. The land can be from 2 ha upwards, to around $40,000.

Ray and Ros Foster, c/- PO Hahndorf, South Australia, 5245.

For sale: 50 acres close to Deloraine, Tasmania. Thirty years ago it was a farm and is now surrounded by State Forest, 10 acres could be used immediately, the rest is regrowth blackwood and gum. There is a permanent creek, a small dam and three springs, a settler's cottage and stable, goat shed and tool shed. It is a four-wheel-drive access for two miles and there is no commercial power. Price $15,000 ono.

Rosie Dee, 34 Victoria St, Ulverstone, Tasmania, 7315.

We are looking for a small block of land, in the bush, with an old home, stone cottage, or anything livable, in Queensland, NSW or Victoria. We need plenty of natural trees and shrubs, dams or permanent water, with space for chickens, goats, donkeys, ducks and garden. We don't need town water or electricity.

We prefer an open fireplace and wood stove in the home, but we don't mind doing a few improvements.

Bev and Trev Pope, C/- Mrs G. R. McLean, 44 Miniver Crescent, Modbury Heights, South Australia 5092.

I would be delighted to hear from anyone interested in getting together a small group, with a view to buying land somewhere near the mountains in southern NSW. The aim would naturally be to develop a high degree of self sufficiency.

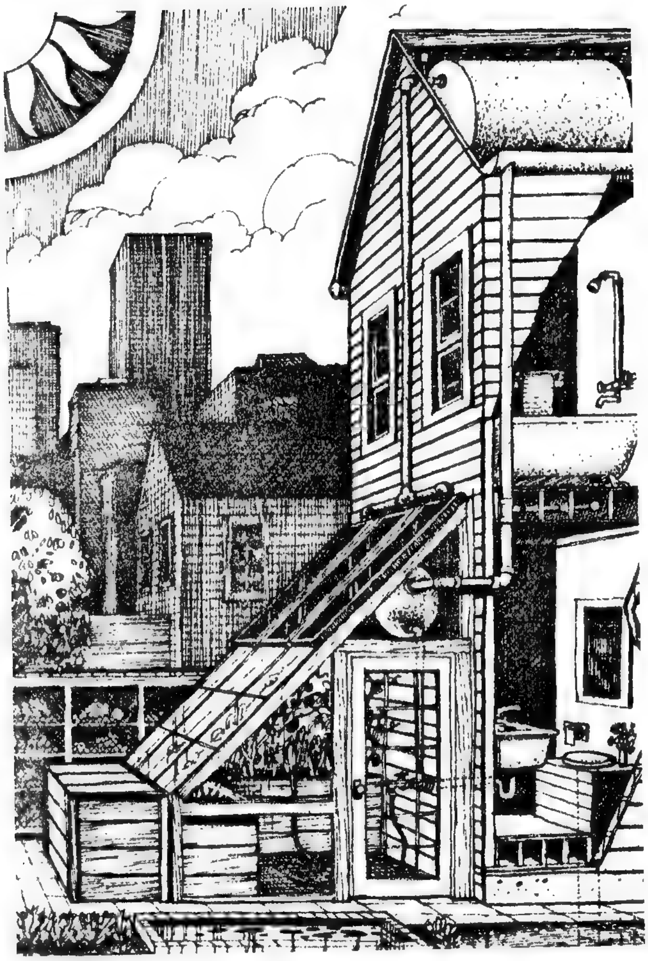
I am experimenting with solar cooking, water and space heating, mudbrick building and pedal power for a variety of jobs around home and farm. Surely there must be others who share my love of the mountains, away from all that northern heat and humidity? As an added bonus we could sometimes get away to indulge in some ski-touring!

Please write to Tony Sharpin, 106 Prince Edward Park Road, Woronora, NSW 2232.

I am a retired manufacturer who wishes to establish a commune on the Kibbutz principles of sharing, co-operation and harmony. I have purchased five wooded acres bordening Mt Dandenong State Forest, 40 km from Melbourne, zoned cluster sub-division. The commune would be self-sufficient in eggs, milk and vegetables and will offer employment as a health resort and training advice on city careers.

We seek mature and intelligent persons who abstain from alcohol and drugs and have some knowledge of vegetable gardening and raising small animals; people who prefer a spiritual way of life. Members will be required to contribute to their own equal accommodation according to means and ability. A five bedroom brick residence is to be completed by March or April, 1981.

Please write: G. Mino, PO Box 122, Montrose, Victoria 3765.



THE INTEGRAL URBAN HOUSE

Self-reliant living in the city

Helga & Bill Olkowski, Tom Javits & The Farralones Institute, Sierra Club Books, San Francisco, 1979, large format paperback, 494 pages, illustrated. Price $18.00.

"Cities are where people are. Everyone can't move to the country or there won't be a country anymore . . . The challenge is to make cities ecologically stable and healthy places to live."

That's the theme of this book which is a manual based on an actual model, *The Integral Urban House* at Berkeley, California, a "life-support system" in the suburbs. But all the information and projects here would be useful for homes in the country.

Major topics include conserving energy, "tightening" the house with insulation, storm doors and weathering (more useful in a cold climate), wood heat, managing wastes, using grey water, recycling, growing vegetables in containers, in a greenhouse or a small garden, keeping small stock in a confined space, solar energy and wood chip pathways.

There are plans for building a window greenhouse, planter box, cold frame, greenhouse, fly trap and solar oven. The book is overflowing with useful ideas and details. Highly recommended.

Our copy from Second Back Row Press Pty Ltd, P.O. Box 43, Leura, NSW 2781. Postage about $1.50.

MEAD

BY R. GOEBEL
Experimentalist in Apiculture,
Qld. Dept. of Primary Industries

Interest has been shown recently in beverages made with honey, the most common being the meads. These are wine-like beverages with an alcoholic content usually between 8 to 14 per cent.

To this base a number of additives may be incorporated, giving a variety of flavours and aromas, but are preferably left out, relying on the type of honey imparting its flavour to the drink.

Honey is usually the carbohydrate in the fermentation, although used solely with water and yeast in the production of mead it is also used commonly to replace cane sugar in other brewing recipes.

Mead making

This recipe is to help demonstrate the relative simplicity of mead making on a small scale. A wide range of meads can be obtained by variation of the ingredients.

Ingredients:

Must — 1.8 kg of choice ironbark honey; 3.5 litres of clean taint-free water; Yeast — either a dried or liquid culture of champagne or mead yeast.

Temperatures:

Hot — 100°C
Warm — 20°-22°C
Cold — 15°C

Sterilising:

Dissolve 10 gm of sodium metabisulphite in one litre of water or use campden tablets as sterilisers. Clean all equipment in hot water using a bottle bush. Rinse with a steriliser and let drain dry.

Inoculant:

Bring to the boil 225 ml of must, let stand in a bottle stoppered with a cotton wool plug until warm, then add the yeast. Prepare yeast according to any directions on packet or container. After 24 hours the liquid should be cloudy with bubbles rising when shaken gently.

Method:

Dissolve the honey in two litres of hot water then add 1.2 litres of cold water, place in a sterilised fermenting vessel and stopper with a cotton wool plug. Leave stand until warm, then add the inoculant and insert the airlock. This fermentation will last 3-4 months then clear naturally at which stage it is siphoned into bottles and sealed. Care is needed not to stir up the sediment in the fermenter.

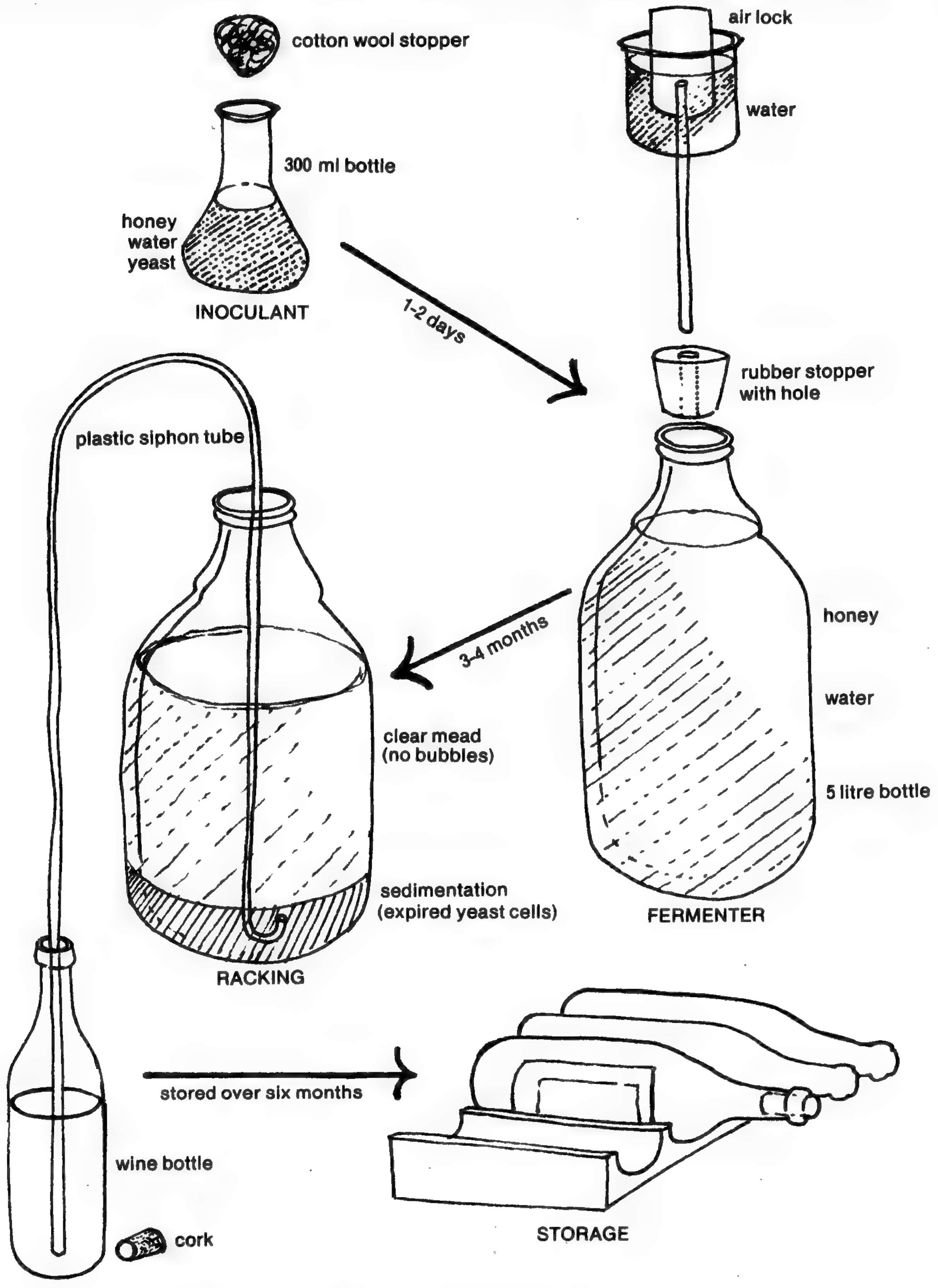
Bottles can be sealed with crown seals similar to beer bottles but corks (which are more expensive) are necessary for long bottle storage and effective presentation of the product. The mead should be aged at least six months before being swigged.

REFERENCES

Brewing Beer at Home, Keith Linden, Angus and Robertson, Sydney, 1971.

The Pan Book of Wine Making, B. C. A. Turner, Pan Books Ltd., London, 1971.

Home Wine-Making, B. A. Chatterton, Rigby Ltd., Adelaide, 1972, 60 pages, $1.95.



REMEMBER — all equipment must be sterilised before use.

more land lines

We are a middle aged couple with a mixed farm of 764 acres, about 16 miles south of Cessnock, NSW. We are traditional farmers, who have never been caught-up in the petro-chemical scene. Earth people who would like to call and gain some experience by helping with chores in return for board are welcome.

Write to Edwin and Madge Crawford, PO Box 138, Cessnock, NSW 2325, or phone (049) 98 1341 preferably between 7.00-8.00 pm.

PIG LINE

We have excess pigs, backfatters and small ones. for anyone who wants to get into pig-tractoring in strong pens, or use electric fences. Pick-up the animals yourself. From $10.00 a piglet or $30.00 a litter.

Joe Friend, 1049 Old Northern Road, Dural, NSW 2158. Phone (02) 651 2336.

Conservation village: A group of people are interested in purchasing a large tract of land in South Australia. From 1000 ha to 5000 ha is required to establish a conservation village. Any area would be suitable, but availability to water is essential.

Please contact: Hansjorg Graf, Flat 2, 40 Aldridge Tce, Marleston, SA, 5033.

Sell or exchange 3 bedroom solid brick home, fully carpeted, large kitchen, dining room, lounge, gas hot water, double garage, service pit, workshop. Good condition. Value about $35,000. For rundown farm or semi-cleared bush block with water and electricity, western Victoria area preferred.

Contact Mr Tibor Varga, 19 Marshall St, Newtown, Geelong, Victoria, 3220 Phone (052) 21 2173.

Needed to rent in the Armidale (NSW) area, a 3-4 bedroom house not too far from town, on upward of five acres, a reasonable rent, as comfortable and liveable as possible, to house 3 adults and 2 young children, in 1981

Contact Barbara Mason, 88 Burringbar Rd, Valentine, NSW, 2280. Phone (049) 46 7581 or Peter and Karen, phone (02) 389 5914.

We have 30 acres of bushland for sale on the south coast of NSW at Bodalla. Electricity is available to the site at no cost. It is fairly hilly and mostly uncleared bush. We would like $9500 but are willing to negotiate.

Penny and Lindsay Everingham, 78 Turner Street, Thirlmere, NSW, 2572. Phone (046) 34 1219.

We are on the lookout for about 100 acres on the south coast of NSW or maybe further north in the Armidale-Taree area. We keep 100 sheep and practice a variety of arts and crafts. We would want about half pastured, half natural bush. A water source is essential, but power is not. No buildings are needed — we will build our own. Anyone interested in joining in with us might like to write, it would be good to have like-minded neighbours.

Write: Neil and Roslyn Clarke, natural houses, c/- PO Dawesville, Western Australia, 6210.

We are writing to let people know about Sunrise Valley Holistic Village. It is a place where guests can come to live in a peaceful environment to learn new age skills that we have to share. We have a naturopath in residence, talks and workshops on natural farming and gardening, natural health and medicine, country crafts and Hatha yoga. Seven acres of fertile creek flats have been prepared for intensive vegetable and grain production. We need people to help run the centre, next to Sunrise Farm Community, 98 km north of Bairnsdale, Victoria. Send SAE for further details.

Fred & Radhika Koch, Sunrise Farm, Buchan, Victoria 3885. Phone (051) 55 0215.

I am writing to let "back to earth" settlers know about the Byfield area, 40 km north of Yeppoon in Central Queensland. Soil is excellent, with 60-80 inches of rain each year, rainforest and many streams. Land is available and I would like to see people who can appreciate the environment coming here, rather than those who exploit it. If I can be of help to interested people, please write.

Ray Driver, 29 McGrath Street, North Rockhampton, Queensland 4701.

We have a 2 acre property with a 4 bedroom home on it, which we are putting up for sale because we have been asked to share in establishing a Christian community in Queensland. We have developed the land to a stage for rotation of crops, to be integrated with rotation of stock. We have an orchard of 22 fruit trees (citrus, stonefruit and figs) and gardens. We are 8 miles from Tamworth, NSW, and the school bus stops at the front gate. All fencing is rabbit-proof. Asking price is $50,000 ono. There is adequate water.

Don Chester-Woods, "Dunromin", RMB 4599, New England Highway, Kootingal, NSW 2352.

We are two families wishing to sell 1/5th share each in a 575 acre private bush property near Grafton, NSW. There is a permanent creek and one boundary with deep swimming holes. Each shareholder owns 35 acres to work how they want, either jointly or individually. The remainder of the land is owned in common and is used as a "wildlife refuge".

One share is $7500 and includes a small dwelling. The other share is $21,000 and includes a small dwelling, workshop, cow shed, fowl house and fenced garden, orchard, fodder area and paddocks. There is no electricity. Some residents have telephones and a land line communications system. Some children are doing correspondence schooling and one is going to Grafton Primary by school bus.

For more details, please write to Murray Dillon, PO Box 8, Grafton, NSW, 2460.

We are looking for alternative minded families, preferably (but not necessarily) vegetarians interested in a natural, harmonious lifestyle, spiritual growth, natural healing, organic farming, self-sufficiency and involvement in a community. We have 220 acres in north-eastern NSW, 15km west of Nimbin, beautiful land, with cleared areas, bush, forest, large creek, dams and springs.

At present there are four families as shareholders, with six children, ranging in age from 1½ to 7 years. One family wishes to sell their ¼ share for $10,000 and there are two additional 1/6th shares now available for $8000. A share entitles each family to a homestead area of five acres, with remaining land shared by the community.

Please write to: Elaine Catton, "Rivendell", Hetherington Road, Wadeville, via Kyogle, NSW, 2474.

We are looking for someone to work and/or caretake our 40 acres in the mountains near Maleny, Queensland. We have to live in Brisbane for some time yet, as finances are not quite right for our exodus to the country. At present we have built a 25ft x 35ft garage/shed, an outhouse (with a view) and a smaller implement shed. Power is laid on and water is pumped up to our future house site from the creek 900 feet away.

The orchard has about 60 fruit and nut trees that need much looking after. We plan to plant many more, but not until someone is there to give them water when they need it. We are looking for an Earth Garden type person (or persons), who are fairly rugged and independent, preferably skilled in building or handy with tools. There is stack of work to be done.

Anyone interested, please write immediately to Charles Whipple, 37 Reinhold Cres, Chermside, Qld, 4032.

For sale, exchange or lease — a 100 year old Kauri villa overlooking the rooftops of Ponsonby, a two mile walk or trolley ride to Auckland (population 800,000), New Zealand. Handy to yoga centre, naturopathic college, herb and homeopathic societies. Climate is cool and green, but summers can be warm and winters chill (so bring your woolies).

We seek a rural home where a 16 foot pyramid may be built, near a city or town to locate a natural therapeutic clinic. We have some quiet skills, but we are not looking for back-breaking labour.

Write to Mike & Sue Phillips, 2 Wharf Road, Herne Bay, Auckland 2, New Zealand, or phone 76 1507.

Help! We've just arrived from Germany. We are looking for a group of people who are already living in the bush or wanting to build up a community. We are not strict vegetarians, but we wouldn't like to start mass production farming of any kind.

We are a brother and sister (29 and 30 years old) and we are practical and skilful (building, gardening, baking bread, education). We would be able to buy a small share. Not interested in tropical climate.

Lots of love, Peter & Ulrieke Szaif, Poste Restante, GPO Melbourne, Victoria 3001.

We are seeking secluded land in the bush with permanent water, some fertile soil and, hopefully, conservation-minded neighbours. We have immediate cash to $20,000, having just sold our little farm. If anyone has ideas of sharing a larger property, please write.

Love, Viv Suttor, 5/26 Toongarah Road, Waverton, NSW 2060.

We would like to contact anyone who breeds or knows anything about Barbados Blackbelly sheep.

We are also in the process of looking for land, but by the time we receive Earth Garden (by seamail) all the land for sale that interests us has gone. We need at least 20 acres (preferably more) with a permanent supply of fresh water, within commuting distance of a high school. It can be anywhere from northern NSW to north Queensland, as long as the land is suitable for a self-sufficient lifestyle.

Hope some readers may help. Please write to Rosemary Anderson, c/- P.O. Box 140, Nhulunbuy, Northern Territory 5797.

We, Joy and Rodger, want to intimately share our lives with other people. We are working towards a communal, coastal rainforest home within the next few years. Our household will be basically vegetarian and without drugs or pets.

For further information, please write to Joy & Rodger, 43 Bent Street, Paddington, NSW 2021.

Dear people. We (two of us) would like to rent a house somewhere along or near the Victorian coast between Inverloch and Warrnambool, with a slight preference to the area around Inverloch-Korumburra. We would need a few acres of land as we have a horse with us. We need a reasonable rental, but can fix up the house if necessary.

Regards, Shane O'Brien, 7 Andrews Street, Heidelberg, Victoria 3084.

We are Michael, Maureen and children Rachel and Aaron and have a 65 acre property on the Macleay River, 17 miles west of Kempsey, NSW. Our home is timber and concrete, stained brown to fit in with the country. It has wide verandahs hung with jasmines, allamanda, marettia and bleeding heart. There are 5-6 bedrooms, 2 kitchens, septic toilet, two showers, two large lounge-living areas. The house is fenced with gardens and fruit trees. There is also another 2 bedroom concrete block house which we rent out. The property has cattle yards, two dams, permanent creek, river frontage, 10 acres creek flats. Price: $75,000.

Contact Maureen & Mike Corden, 'Narnia', Temagog, via Kempsey, NSW 2440, or phone (065) 61 7119.

In December 1979 we migrated from Germany to Australia to start a simple rural lifestyle. We found what we are looking for, the right piece of land where we can realise our ideas.

We lived first on a co-op and gained a lot of experience in living in the bush. Now we have started our own co-op of 570 acres, near Grafton, NSW. There is so far a water supply, a small garden and some clearing. Every shareholder gets 15 hectares and the rest is wildlife refuge. Price of the 20 shares with improvements is $7,500. There is permanent water on the creek, with big pools for swimming.

Please contact: Hans & Monika Mertiny, 'Bauhinia', Copmanhurst, NSW 2460.

For sale: A beautiful 23 acre organic farm with road and stream frontage in the Huon Valley, 45 minutes from Hobart at Castle Forbes Bay. House is two bedroom, insulated, cosy repaired period cottage with river views. Has Rayburn combustion stove with attached hot water system, furnished with refractory tables, benches and built-ins.

Land comprises ½ acre vegie and herb garden of river loam soil, with 16 acres well fenced pasture, running coloured sheep, dam, permanent stream, goat-proof paddock and balance of dense bushland. There is a big ex-apple shed and chook house. I am selling to go overseas and asking around $32,500, all inclusive, negotiable.

Steve Giles, P.O. Box 76, Geeveston, Tasmania 7116. Phone: (002) 97 1543.

I'd like to sell a small property which I loved, cleaned up, built on, watered and cared for. I hope someone will continue the work. It is a licensed sawmill with 8 acres of good yellow box, fenced, a two-roomed cottage, worksheds, big dam, pumphouse, 3,000 gallon tank, all connected. There is a well established garden, glass house and fruit trees. Machinery: 60 h.p. diesel tractor, Austin 7 ton table truck, two saw benches, 12 inch planer for weathereboard and floorboards. Plus one horse, phone connected, no electricity. Freehold $18,000.

Johann Petraschek, 65 Finniss Crescent, Narrabundah, ACT 2604. Phone (062) 95 9936, or contact Joe Barillari, Coolah, NSW 2853. Phone (063) 77 1034.

I am selling a gloriously beautiful foothill of Springbrook Mountain, northern NSW. It's a bird sanctuary on the edge of the forest, 8 acres, with creek, half grass, half forest, one paddock. It's a self-sufficiency place, with 30 different fruit and nuts (three years growth), avocadoes thrive especially. Big old house, restored and modernised. There is a school bus. Price $49,000.

Mrs H. B. Markby, Springbrook House, Upper Crystal Creek, Murwillumbah, NSW 2484.

Wanted: Good growing land with house and power, frost-free area and permanent source of water essential. All sizes of acreage considered.

R. McCabe, Skeleton Creek, via Glen Innes, NSW 2370.

If anyone is travelling to Europe in 1981 and would like to rent a typical Earth Garden smallholding in Spain at nominal rent, plus a little housekeeping, please contact me. The house is in a small, idyllic, terraced valley, yet only a half mile to the village, 2 miles to the market town and 8 miles to the beach and 'civilised' holiday resorts — very close to Utopia.

Regards, Bill Paine, 32 Charles Street, Petersham, NSW 2040. Phone: (02) 569 1998.

My daughter and I have for sale a small property of 9 acres being used as a horse stud. It is 12 miles from Kempsey, NSW off the Armidale Road at Collombatti. We have a small two bedroom cottage with electricity and a 2,000 gallon water tank. Property is fully fenced, with a large dam and a magnificent view. We hate selling our little farm, but we need more land. Price $25,000 o.n.o.

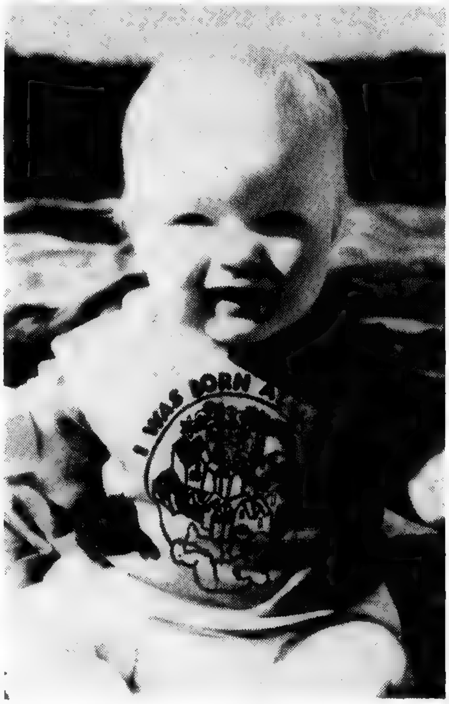
Please contact Marcia & Lorraine Savage, P.O. Box 351, Kempsey, NSW 2440, or phone Wayne or Carol Rushby on (065) 66 8367 and leave a message.

access

I WAS BORN AT HOME

Stickers, T-shirts, bibs, etc, from Elaine Norling, 83 Albert Drive, Killara, NSW 2071.

Logo printed in deep purple. Price includes post and packing. Vinyl stickers, 16 cm square, each $1.00, for 10 stickers, $6.00; Singlets, white, size 1 and 2, $2.50; Bibs, orange or pink, $2.50; Pillow cases, baby size, red or blue, $2.50; Shirts (limited colour range and quantity); T-shirts, size 0, 1, 2, 3, 4, 6 — $4.00; Crew neck, long sleeves, sizes 0, 1, 2 — $4.50; Skivvies (polo neck), size 0, 2, 6 — $4.50. These are in white, red, blue, lolly pink and yellow. Please state colour(s) preferred and whether for boy or girl. I'll do my best. Adult shirts, or other sizes or objects printed to order. Write for quote.



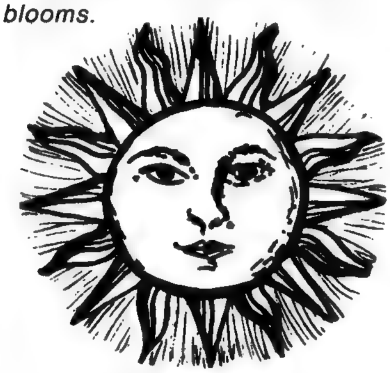
That's Owen Norling with T-shirt in the photo.

1981 Astrological Calendar & Moon Planting Guide

$2.00 posted, from Thomas, Mt Cougal Road, West Burleigh, Queensland 4219.

A purple poster this year to follow the phases of the moon and astrological positions of the sun and moon, with a fully explained key to ensure strong, fertile plants. There is a discount for quantity orders.

Plant in Libra for beautiful blooms.



Eighth International Human Unity Conference

Vancouver, July, 1981

The Society of Emissaries is a group linking holistic living centres around the world, an attempt to weld a *oneness* from the various New Age philosophies and alternatives.

"There is a lot of talk about the oneness of man, but it can only happen if we allow it to happen in our own experiences. And if we don't, who's going to?" say Leigh and Christabel Gollop, Australian co-ordinators. Write to them at 32 Walkerville Terrace, Gilberton, South Australia 5081, for more information.

BOOKS BY MAIL

The Bookshelf

116 Bridge Road, Richmond, Victoria 3121.

Catalogue of self-sufficiency books — 50 cents.

This is a new mail order service run by Ken and Lym Fraser. Just about any book we have ever reviewed in **Earth Garden** may be ordered, covering self-sufficiency, farming, building, wood heat, crafts, tools, energy (solar, water, wind), food, cooking, gardening, herbs, health and livestock.

A second catalogue on **Australian Aborigines** — also at 50 cents — contains 400 titles, making it easily the biggest range of books available on the subject. It includes specialist works from groups, associations and small publishers.

CHASE SEAWEED PRODUCTS

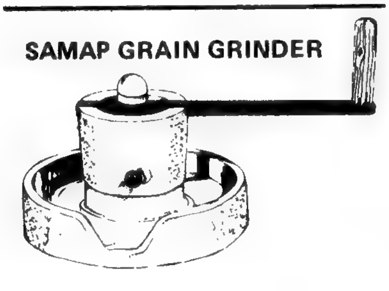
Joe Friend
1049 Old Northern Road
Dural, NSW, 2158

Joe Friend is an agent for Chase's **SM3** liquid seaweed plant fertilizer, **OR** compost activator and **Blend 1** nutritional supplement for horses. Send SAE for prices.

Samap Stone Hand Mill

The Samap grain mill is a modern design, but startlingly like the stone querns which have survived in ancient Egypt. It will mill hard, dried cereals and legumes, rice, wheat, rye, oats, barley, and buckwheat and will also grind soybeans which have been frozen. They are made in France.

Sent SAE for information and price to: **Alternatives**, 37 Bangalla Street, Torwood, Qld 4066.



SAMAP GRAIN GRINDER

letters

Dear Keith & Irene,

I enjoy your magazine very much. My husband John and I moved to the country 18 months ago and are very happy here. John has a beautiful garden, where he spends so much time. We have 2½ cows and about 20 chickens. I make my bread, butter and cheese (which tastes so good). Life in the country is so rewarding. We can listen to the birds and watch the little animals in the grass and under the trees. We have planted mangoes, orange, lemon, pawpaws, grapefruit and mandarins. I hope lots of people live the same as we do.

Regards, Jasmine Sauvere, Oakey Creek, via Casino, NSW.

Dear Irene & Keith,

Due to the three year drought in our area we are unable to grow many of our needs and are very anxious to purchase organic produce in the Nowra-Sholhaven area. We have free range eggs to sell or exchange. We are particularly interested in organic corn, carrots, potatoes, asparagus, onions, cabbage, apples, stonefruit, figs, mulberries, grapefruit (even sour ones), oranges, grapes and organically raised beef.

Please write to L. & B. Wells, C/- Post Office, Falls Creek, NSW, 2540.

Dear Keith & Irene,

I think there is an opportunity for ecologically-minded people who own land to use the existing legal system to give their land some protection from over-exploitation in future generations. I am referring to covenants, which in the surburban scene, for example, stipulate that houses must be built of brick and tile in some areas, or may have to cost a minimum price to maintain the "tone" of the area.

I feel that covenants could also be used in the case of private rural land to prevent, say, over-cutting of forests, clearing of land which is too steep, or the clearing of stream banks, which allows greater erosion.

During the year a solicitor and I will be drafting a general purpose covenant to cover as many of these areas of concern as possible and will make it available as a model. I am sure quite a lot of thought along these lines has been done by people setting up group-owned properties and would be very pleased if anyone who has done so would send me a copy of the relevant parts of their articles of association, etc, or would write to me with any suggestions on this matter.

Yours faithfully, Carl Hoipo, (H.D.R.A), 19 Cobran Road, Cheltenham, NSW 2119.

Dear Irene & Keith,

We are enjoying **Earth Garden** and looking forward to reading about what to grow in a cooler climate — believe me, Toowoomba can get pretty cold!

I've pigeon peas growing here and am very pleased that the frost has not done away with them. I grew them in Townsville, having been given the seeds by a Jamaican friend who had been brought up to use them fresh and dried. I also have a Brazilian cherry tree which is doing well here, except for a slower growth. My parents had a hedge of Brazilian cherry trees in Brisbane, grown from seeds taken from my grandparents' trees. My mother, who is 83 this year, remembers picking those berries when she was very small.

Best wishes, Ellwyn Elms, Darling Heights, Townsville, Queensland.

& from us

Dear friends,

Here we are at the start of another year together — and it's our tenth year of producing **Earth Garden**! We wish all our readers a happy and fruitful year in 1981 and hope that it won't be as dry as 1980.

We began our year well, with a delightful holiday in the bush, "house-sitting" for some friends. All we had to do was water the garden and feed the chooks and goat. In return we reaped the rewards of our friends' hard work, an abundant supply of vegies and a cool, comfortable house to laze and read in.

Melissa loved it too, especially collecting the eggs for breakfast and eating her first "double-yolkers". She was thrilled to see the kangaroos and wallabies which came at dusk and in the early morning to nibble the grass (luckily, they kept away from the garden). Our week of rest and quiet in the beautiful forest country passed far too quickly.

Melissa, now aged 6½, is back at school again and enjoying it even more as a "big, second class girl" and we are happily back at work, putting this issue together. We're looking forward keenly to the months ahead, to hearing from you and to bringing you regular issues of **Earth Garden**.

Coming Up

Next issue, EG30, out in May, will feature organic growing, from the basics through composting, mulching, growing food plants and fertilisers to more specialised methods, such as bio-dynamics.

As well as this there will be a beaut story on colourful bottle windows for mudbrick walls, our usual features like letters, land lines and access and this time, something on the **inside** of the house, probably the most important part, the kitchen. We'd like stories and hints on **your** kitchen — your experiences, suggestions and how you built or arrived at the plan for your food preparation, cooking and storage areas (and maybe some of your favourite results too!)

In EG31, out in August, we'll have an index to issues 21 to 30, to complement the two previous ones in EG10 and EG21. In future issues we also hope to bring you articles covering herbs and their uses, alternative energy, unusual vegetables, more owner-building (poles and concrete), cookery and lots more.

As usual we'd appreciate your comments, stories and hints on all this. People always learn from the experiences of others and through **Earth Garden** we can all share our knowledge and grow together.

Peace & love,
Keith & Irene

ALTERNATIVE HOUSING

Building with the head, the heart and the hand.

The curved mudbrick walls of Robin Batty's house, built to fit into a steeply sloping site.

Alistair Knox, An Albatross Book, Sydney, 1980, 150 pages, colour & black and white photos. Price $14.95.

Alistair Knox has designed some of the finest mudbrick homes built in Australia — his own house at Eltham, Victoria, is an outstanding example. He wrote about the earth building revival and his part in it in his book *Living in the Environment* (reviewed in Access 1, EG22-3, page 123). This new book continues the theme, again reaching out from basic design of housing to lifestyle, and including the author's own religious, aesthetic, political and philosophical outlook, with some autobiography.

Some of the most interesting parts of this work are about Alistair's family — his wife Margot's kitchen (and her homemade bread) and the adventures of his sons. The colour photos are inspiring and either book would interest people who have never considered the alternative of earth building.

To my mind the best brick is that which is puddled and placed in the mould by hand, or on to a multiple mound by machine then pressed into the individual moulds by hand.

Our copy from Second Back Row Press.

EARTH GARDEN, PO Box 378, Epping, NSW, Australia, 2121

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EG1: MOVE OUT ... HANS POULSEN ... KIBBUTZ ... MOSHAV ... FOOD CO-OP ... ACCESS KEY ... MONTSALVAT ... EARTHWORMS ... FRED ROBINSON ... HERBS ... BEAN SPROUTS.

EG2: ORGANIC FARM ... START A GARDEN ... NEIL DOUGLAS ON THE ART OF GARDENING ... P. A. YEOMAN'S KEYLINE SYSTEM ... KIEWA FARMS ... DRYING FOOD.

EG3: HERBS ... COMPOSTING ... ALL ABOUT GOATS ... COMPANION PLANTS ... MUDBRICKS WITH ABBIE AND NEIL ... DOMES ... WATERWHEEL ... BREAD ... POTTERY ... SPINNING .

EG4: A PLEASANT TREATISE ON THE HONEY BEE ... BACK TO THE LAND IN TASMANIA ... THE TRANSITION ... ENZYMES ... BLACK SHEEP ... CANDLES ... HOME TANNING ... DONKEYS.

EG5: WIND ISSUE — WINDMILLS ... WINDPUMPS ... GENERATORS ... RAKU ... CINVA-RAM ... TOOLS ... POULTRY ... THE VEGAN WAY ... MOON PLANTING ... JUST NINE ACRES.

EG6. SOLAR 1 — SOLAR COOKER ... SUNDIALS ... SUN SCIENCE ... THE LOST WORLD ... CONCRETE HOUSE ... SHALOM ... CAJUN COOKIN' ... SPIRIT OF NIMBIN ... CLIFF PUGH ... GONDWANALAND.

EG7: SOLAR 2 — SOLAR HOT WATER IDEAS AND SOURCES ... GOOD COMPANY ... FLIGHT FROM THE CITY ... ANGORA GOATS ... MAKE A LEATHER BAG AND BELT ... MUDBRICKS AGAIN.

EG8: GAS POWER — METHANE DIGESTER ... POWER FROM THE PIG PEN ... BY TRUCK TO TASSIE ... ¾ ACRE ... CUMBUNGI HATS ... HARMONY FARM ... TAPERS ... INKLE LOOM ... COTTAGES ... A-FRAME.

EG9: ALTERNATIVES TO PETROL ... LPG GAS ... MARY'S PLACE ... STONE RUBBLE BUILDING ... MACROBIOTICS ... OATS ... DUCKS ... HORSE AND CART ... A RUG FRAME ... ORGANIC FARMING ... HOW TO KILL A PIG ...

EG10: A GRANITE HOUSE ... BAMBOO FLUTES ... GEESE ... CHIP WATER HEATER ... MAKE BEEHIVES ... NODDY'S DOME ... MUDBRICKS YET AGAIN ... JARRAH SHINGLES ... BIODYNAMICS ... A TANDEM ... INDEX.

EG11: WATER ISSUE — HYDRAULIC RAM ... WATER WHEELS ... A MILLER'S TALE ... SEED PRIMER ... HEAVY HORSES ... OKRA ... TOMATOES ... START WITH HENS ... WINE ... HARD CHEESE.

EG12: KEEPING FOOD — DRYING ... SALTING ... BOTTLING ... STORING ... TAHU ... TOBACCO ... PLANT PROPAGATION ... GARLIC SPRAY ... PLANS FOR A SOLAR WATER HEATER (PART 1) ... SOLAR STILL ... SOLAR COOKER.

EG13: THE BUSH — MEN WITH AXES ... WOODCHIPS ... NATIVE GARDEN ... FLORA AND FAUNA ... NATIONAL PARKS ... WILD PLACES ... WILD LIFE ... BUSHCRAFT ... SOLAR HOT WATER PLANS (PART 2).

EG14: SELF-SUFFICIENCY — GARDENS FOR ALL ... BOTOBOLAR GRAPES ... ABIGAIL'S GOATS ... MILLET ... CRUSOE ... THOREAU ... HELEN AND SCOTT NEARING ... WE BUILT IN STONE ... HEALTHY SOIL.

EG15: A LYTEL HERBAL — GROWING AND USING HERBS WITH TEXT AND ILLUSTRATIONS FROM THE CLASSIC 16TH CENTURY HERBALS, WITH MODERN COMMENTARY ... COMPANION HERBS.

EG16: LYTEL HERBAL (PART II) — PLUS PEOPLE AND THE LAND ... MOORA MOORA ... POULTRY SHED ... PEAFOWL ... GOAT NOTES ... BASIC BEEKEEPING ... PIONEER PISE ... MIRACLE PUMP ... COMFREY.

EG17: ALL ABOUT FENCING ... DRY STONE WALLS ... DUCKS ... NETS ... MAKE SOAP ... THE AUTONOMOUS HOUSE ... POLE SHELTER ... PISE IN DARWIN ... BREEDING BLACK SHEEP ... ASPARAGUS.

EG18: FRUIT — ORANGES ... LEMONS ... CITRUS ... OLIVES ... NUTS ... TROPICAL FRUIT ... FODDER TREES ... BIRDS AND INSECTS ... BUILD A ROAD ... HOME BIRTH ... CINVA-RAM HOME ... WOOD-FIRED KILN.

EG19: WOOD HEAT — POT-BELLY STOVES ... JOTUL ... COOKERY ... MAKING A QUID ... BUILD A STORAGE CELLAR ... EARTHLY DELIGHTS ... ACCESS ... BUSHFIRES ... SUNRISE FARM ... STONE FRUIT ... MACADAMIAS.

EG20: APPLES ... PEARS .... CORDON AND ESPALIER ... AVOCADO ... THE ZOLINS ... POLLEN ... BUILD A HAYBALE PIG HOUSE ... LOVE YOUR COW ... ROSE HIPS ... MUDBRICK FLATS ... ELECTRIC GENERATORS ... SOLAR HOMES ...

EG21: WOMANCRAFT — ALL ARTICLES BY WOMEN ... EARTHLY ARTS ... PUPPETS ... AXEWOMANSHIP ... SPIN AND WEAVE ... RUGS ... OLD ROSES ... MUDDY BUILDING ... SUMATRAN HOUSE ... THE GROUP ... INDEX TO EG10 TO 20.

EG22/23: AUSTRALIAN ACCESS 150 PAGE SOURCE BOOK — ABORIGINES ... ORGANIC GROWING ... PERMACULTURE ... BILL MOLLISON ... WIND ... SOLAR ... WATER POWER ... SOLAR CELLS ... WITH ACCESS TO GROUPS, BOOKS, TOOLS AND TECHNIQUES ... WATER SUPPLY ... BUCKET PUMP (DOUBLE ISSUE).

EG24: PLACE — 24 GROUPS AND NEW SETTLERS SHARE THEIR "PLACE" OUTSIDE THE CITIES. INCLUDES MARE CARTER, RON EDWARDS, NEIL DOUGLAS ... GUNDAROO STORE ... THE OASIS ... RAINBOW REGION ... UNIVERSAL BROTHERHOOD ... MT OAK ... MOORA MOORA ... BUSH ASHRAM.

EG25: AUSTRALIAN ACCESS TWO 130 PAGE SOURCE BOOK — LIVESTOCK ... AQUACULTURE ... FENCING ... WOMBAT GATES ... KILLING ... TANNING ... FOOD AND NUTRITION ... DOROTHY HALL ... FRUITARIAN ... VEGAN ... STORAGE ... GRINDERS ... MINCERS ... METHANE BASICS ... WINDMILLS ... PASSIVE SOLAR HOMES ...

EG 26 COLOUR SPREAD — THE EARTH-BUILT KASBAHS OR MOROCCO ... OWNER-BUILDERS REPORT ON THEIR HOMES OF STONE, TIMBER AND MUDBRICKS ... BUILD A SLAB COTTAGE ... TREE FELLING ... TWO SOLAR-ELECTRIC HOMES ... THE EARTH GARDEN REPORT ... SURVIVAL VINEYARD ... FRUIT WITHOUT POISONS ... ACORNS ... A COMPOST DUNNY ... HOME-MADE GAS

EG27: FOOD PLANTS — 100 TROPICAL FOOD PLANTS FOR AUSTRALIA (PART I) ... PLANT PROTEIN ... 16 LEGUMES TO GROW & EAT LIKE WINGED BEAN, PIGEON PEA, LABLAB BEAN ... COWPEAS ... SWORD BEAN ... LIFE RAFT ... BLACKSMITHING ... BLUESTONE BUILDING ... MUDBRICK SOLAR HOME ... WOK COOKERY ... CHOKO ... HOMEBIRTH

EG 28: ANIMAL STORIES — BY PACK-HORSE THROUGH THE VICTORIAN ALPS ... HORSE & BUGGY ... MARY'S BLACK SHEEP ... THE WOOLLY MERINO ... TIMBERTOWN BULLOCK TEAM ... TROPICAL FOOD PLANTS FOR AUSTRALIA (PART 2) ... STRINGYBARK BASKETS ... TAMARILLO ... DON'T GET STUNG! (BUYING BEES) ... SOLAR TRIKE & FAN ... TIPS & HINTS ... MAKE A POKER